





FLORIGRAPHIA BRITANNICA;

BRITISH PLANTS AND VASCULARS

FLORIGRAPHIA BRITANNICA AND FLORA

OF BRITAIN.

FLORIGRAPHIA BRITANNICA.

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1845.

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FLORIGRAPHIA BRITANNICA;

OR,

ENGRAVINGS AND DESCRIPTIONS

OF THE

FLOWERING PLANTS AND FERNS
OF BRITAIN.

BY

RICHARD DEAKIN, M.D.,

AUTHOR OF "THE FLORA OF THE COLOSSEUM OF ROME," ETC.

VOL. I.—CLASSES I. TO V.

OF
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PREFACE.

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2000

R. D.

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PREFACE.

THE FLORIGRAPHIA BRITANNICA was originally published in monthly parts, the main object being to place in the hands of the botanical student and admirers of our native Flora a cheap, full, and entire work, illustrated with small but accurate representations of each plant; these, amounting to 1625, are arranged in the classes and orders according to the Linnæan method. There is also added a synopsis of the Natural System, and under the orders all the genera are arranged, so that the student may conveniently study them according to both these methods. In the body of the work is given the generic and specific characters, and a more detailed description of each plant, to which is added a short history, and the uses to which they are applied in medicine, agriculture, the arts, &c.; thus rendering it not only a scientific work upon our native plants, but a useful reference as to the economical application of them.

Since the work has been completed, circumstances have arisen (which it is needless to mention here) by which the Author is enabled to reduce it to nearly half the price at which it was originally published; and in order to render it as complete as possible to the present time, a short specific description has been added of those plants which have been discovered or become naturalized since the Parts were published, so that this may be considered almost equal to a new edition of the work.

R. D.

March 20, 1857.

ADDITIONS.

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24. *S. clandestina*, Linn. Leaves oblong, lobed, toothed, or pinatifid, unequally crenate, rugose, upper ones acute, sessile, lower stalked, subcordate at the base; bractees cordate, ovate, shorter than the calyx, upper lip of calyx rounded, minutely three-toothed, the lower bifid corolla pale blue, longer than the calyx.
- Dry, gravelly banks; rare. Lizard Point, Cornwall; Jersey. Perennial, flowering in July.
74. *LEERSIA*, Soland. Panicle lax, often contracted; *spikelets* compressed, single-flowered; *glumes* wanting; *glumelles* two, chartaceous, navicular, much compressed, awnless, nearly equal, the lower one much the broadest; *stamens* three to six; rarely one. Named in honour of *John Daniel Leers*, a German botanist.
- L. oryzoides*, Sw. Panicle spreading; the branches flexuous; spikelets half elliptical, ciliated, triandrous; leaves rough; ligula short.
- English Botany, t. 2908.
- Ditches, meadows, pools, and wet places; rare. Near Henfield and Arundel, Sussex; Mole River, Surrey; Boldre River, near Brockenhurst Bridge, Hants. Perennial, flowering in August and September.
115. *P. Borreri*, Hooker and Arnold. Panicle spreading; in fruit ascending, and patent; spikelets linear, of four to seven florets; outer glumelle obsoletely five-nerved, obtuse, with a minute point, formed by the midrib; leaves flat; root tufted.
- Glyceria*. Bab. English Botany, t. 2797.
- Muddy, salt places on the south-east coast; not uncommon. Perennial, flowering in June.
134. *B. maximus*, Desf. Panicle erect, lax, at length nodding, slightly branched; peduncles elongated after flowering; spikelets lanceolate, downy; florets remote, subcylindrical, about half the length of the straight awns, diverging during

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and after flowering, distinctly seven-ribbed; outer glumella of the lowest floret equal to the larger glume; leaves downy.

English Botany, t. 2820. Parn. Gr., t. 115.

Sandy places. Channel Islands. Annual, flowering in June and July.

168. *S. alterniflora*, *Loisel.* Partial spikes numerous; larger glume five-nerved, fringed with a few short, scattered, bristly hairs on the keel, otherwise glabrous; outer glumelle three-nerved, glabrous, slightly toothed on the keel above; rachis much elongated beyond the spikelets, with a flexuous awn-like point; leaves equal to or longer than the spikes, dilated at the base, continuous, with the sheath and all persistent.

English Botany, t. 2812. Parn. Grasses, t. 75.

Itchin Ferry, Southampton. Perennial, flowering in August.

213. *P. plantagineus*, *Ducr.* Leaves all membranous, stalked, lower oblong, upper elliptical; spike slender, cylindrical, densely flowered; peduncles long, not thickened upwards; fruit minute, obliquely ovate, rounded at the back when recent, acutely keeled when dry.

Deep peaty pits and ditches. Perennial, flowering in June and July.

449. *S. Bahusiensis*, *Fries.* Leaves oblong, lanceolate, stalked, mucronate, single ribbed, faintly nerved; scape much branched from the base, paniced; branches ascending or incurved; spikes elongated; flowers rather distant; calyx-segment acute, with intermediate teeth. *S. rariflora*, *Drej.*

English Botany, t. 2917.

Muddy shores, not unfrequent; nearly allied to *S. Limonium*.

577. For *P. maritimum* read *P. Roberti*, *Lois.*

P. maritimum, *Linn.* Flowers axillary; leaves crowded elliptic-lanceolate, fleshy, glaucous, revolute at the margins; stipules about as long as the internodes, with numerous branched veins; stem procumbent, woody below; fruit longer than the perianth, protruded, smooth, and polished.

English Botany, t. 2804.

Sandy shores. Jersey and Guernsey; Caroline Park, near Edinburgh; Killiney Bay, near Dublin. Perennial, flowering from August to September.

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635. *A. uliginosa*, Schl. Stem prostrate at the base, then erect; flowers one to three, on long slender peduncles; leaves subulate, semiterete, bluntish, nerveless; sepals ovate, acute, three-nerved, about as long as the oblong-ovate petals.
English Botany, t. 2890. *Spergula stricta*, Sw. *Alsine*, Wake.
Banks of a stream near the top of Widdy Bank Fell, Teesdale, Durham. Perennial, flowering in June.
789. *R. ophioglossifolius*, Vill. Leaves oblong, sessile, lower ones cordate, ovate, petiolate; stem erect, many flowered; fruit obliquely ovate, with a short point margined, the sides tuberculated.
English Botany, t. 2835.
St. Peter's Marsh, Jersey. Perennial, flowering in June.
807. *C. sylvatica*, Bromf. Whorls of numerous flowers; leaves broadly ovate, sharply serrated, green on both sides; calyx two-lipped, ciliated, teeth of the upper lip spreading or recurved, of the lower subulate and longer, the throat with a ring of few hairs.
English Botany, t. 332.
Isle of Wight; Kent, Perennial, flowering from August to October.
834. *O. Hederae*, Duby. Stem simple; sepals one-ribbed, ovate below, suddenly contracted into one or two subulate points, nearly as long or longer than the tube of the corolla; corolla-tube curved, limb toothed, wavy, upper lip two-lobed, its side straight, lower of three roundish, nearly equal lobes, the middle one longest; stamens inserted above the base of the corolla, glabrous, with a few scattered hairs on the lower part; style glabrous, with a few hairs on the upper part; lobes of the stigma yellow, cohering to near the middle.
O. barbata, Poir. Babington, in English Botany, t. 2859.
Parasitic upon Ivy, in the South and West of England and Wales; Leixlip, and Mucross Abbey, Ireland. Perennial, flowering from June to August.
O. arenaria, Bork. Stem simple; calyx five-toothed, teeth triangular, subulate, shorter than the tube of the corolla; corolla tubular, nearly straight, middle of the tube compressed at the back, throat slightly inflated, upper lip cloven,

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lobes of the lips obtuse, reflexed at the margin ; suture of the anthers hairy ; style glandular, downy.

O. cœrulea. Babington, British Botany, t. 214.

864. *L. Pelisseriana*, *De Cand.* Glabrous, erect ; leaves linear, upper ones alternate, lower whorled, those of the sterile shoots ternate and broader ; flowers at first in short racemes ; pedicels as long as the bracteas ; sepals linear, acute, twice as long as the capsules, much shorter than the spur of the corolla ; seeds nearly flat, surrounded by a fringed wing, tuberculated on one side, smooth on the other.

English Botany, t. 2832,

On a hill-side between St. Peter's Barracks and a water-mill, near St. Owen's Pond, Jersey. Annual, flowering in June.

L. supina, *Desf.* Glabrous, diffuse, or ascending ; inflorescence glandular, hairy ; leaves linear, blunt, upper ones alternate, lower whorled ; sepals linear or linear-spatulate, shorter than the capsules or spur, about as long as the corolla ; seeds nearly flat, surrounded by a striated wing.

Near Plymouth, Devon ; Poole, Dorset ; Hayle and St. Blaize, Cornwall ; Newcastle-upon-Tyne. Perennial, flowering in July and August.

953. *F. micrantha*, *Lag.* Sepals peltate, orbicular, somewhat cordate at the base, the margin toothed and cut, concave at the back, much shorter than the corolla, and about twice as broad ; fruit globose, subapiculate ; pedicels shorter than the bracts ; segments of the leaves narrow, linear, grooved.

English Botany, t. 2876.

About Edinburgh, and other places in the east of Scotland ; Dover ; Guildford ; and New Burnham, Norfolk, England. Annual, flowering from June to August.

970. *M. arvensis*, *Wallr.* Legumes one to two seeded, ovate, obtuse, mucronate, transversely plicate, rugose ; racemes lax ; corolla twice as long as the calyx ; wings and standard equal, longer than the keel ; stem branched from the base, ascending.

English Botany, t. 2960.

Near Thetford and Cambridge. Biennial, flowering in July and August.

973. *T. incarnatum*, *Linn.* Heads ovate, at length cylindrical,

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stalked, solitary, terminal; calyx hairy; teeth lanceolate-subulate, nearly equal, shorter than the corolla, spreading in fruit; stipules ovate; leaves obcordate; α flowers reddish purple, β flowers yellow.

English Botany, t. 2950.

α , Jersey and in the South of England; β , Lizard Point, Cornwall. Annual, flowering in June and July.

T. Bocconi, Savi. Pods terminal and axillary, sessile, ovato-cylindrical; calyx cylindrical in fruit; teeth unequal, awl-shaped, straight; leaflets obovate or oblong-lanceolate, toothed, smooth above; stipules oblong, with a long subulate point.

English Botany, t. 2868.

Dry places in Cornwall; very rare. Annual, flowering in July.

T. strictum, Linn. Smooth; heads terminal and axillary, stalked, globose; calyx at length campanulate, with nearly equal, awl-shaped, spreading teeth; leaflets elliptic, lanceolate, toothed; stipules rhomboid, pointless, toothed; stem erect.

English Botany, t. 2949.

Rocks near the sea; rare. Jersey, Landewednack, and Old Lizard Head, Cornwall.

1111. *Epipogon, Gmel.* Perianth resupinate; sepals nearly equal, spreading lip superior, three-lobed, with an inflated short spur; column, with the stigma at the base, in front; pollen masses two-sectile, stalked, the stalk attached to a triangular gland; ovary straight (not twisted).

E. Gmelini, Ledeb.

Hook, in Bot. Mag., t. 4821. *Satyrium Epipogium, Linn.*

Stiff wet soil, foot of a steep woody bank close to a brook, Ted-stone, Delamere, Herefordshire. Mrs. Anderton Smith.

1148. *Z. nana, Roth.* Leaves one-nerved; spadix short, few-flowered, with extra marginal appendages; fruit smooth.

English Botany, t. 2931.

Dover beach; Poole harbour, Dorsetshire; Ryde, Isle of Wight; between Fairlie and Hunterstone Point, Ayrshire; very abundant.

1182. *C. collina, Willd.* Barren spikelets solitary; sessile glumes

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obtuse or retuse, fertile, one to three, roundish, approximate sessile; sheaths short, membranaceous, lower most generally with an awl-shaped bractea; glumes broadly ovate, usually emarginate, mucronate; fruit very downy, obovate, oblong trigonous, the sides nearly flat, beak very short, notched roots tufted, fibrous.

C. montana, Schk. English Botany, t. 2924. *C. pubescens* Gand.

Near Tunbridge Wells, Sussex; Limestone Wood, about four miles from Chepstow, Monmouthshire; near Penmoyle Rocks, Gloucestershire.

1236. *S. cuspidata*, Schultz. Leaves oblong, lanceolate, much acuminate; stipules half-cordate, oblique; stamens three to four; style short; stigmas bifid; stalks of the ovary three to four times as long as the gland. *S. Meyeriana*, Willd.

Near Shrewsbury. The Rev. W. A. Leighton.

1304. *A. nitens*, Rebert. Stem herbaceous, erect branched; leaves triangular, acuminate, shining above, glaucous beneath, lower ones cordate, hastate, upper deltoid, somewhat auricled, uppermost lanceolate; perianth of the fruit ovate, acuminate, entire, smooth on the back, thin, and finely reticulated.

Sea-shore. Ryde, Isle of Wight. Dr. Bromfield. Annual, flowering in August and September.

[*Anacharis alsinastrum*, a North American plant, has recently, and with most extraordinary rapidity, naturalized itself in our streams and canals, extending and growing so vigorously as to obstruct, in many parts of the country, the passage of the canals, and fill up the streams, mill-ponds, dams, &c.]

SYNOPSIS OF THE GENERA.

CLASS 1. MONANDRIA.—1 *Stamen*.

ORDER 1. MONOGYNIA.—1 *Pistil*.

1. SALICOR'NIA, [Page 1.] *Perianth* single, swelling, fleshy, nearly equal. *Style*, short. *Stigmas*, two or three-cleft. *Seed* one, inclosed in a thin transparent skin, enveloped in the inflated *perianth*.
2. HIPPU'RUS, [Page 3.] *Perianth* single, crowning the germen with a slight border. *Seed* one, inclosed in a small oval, hard, and shining *pericarp*.

(See *Valeriana rubra*, in Class III.; *Alchemilla arvensis* in Class IV.; *Zostera* and *Callitriche*, in Class XXI.; *Chara*, in Class XXIV.)

CLASS 2. DIANDRIA.—2 *Stamens*.

ORDER 1. MONOGYNIA.—1 *Pistil*.

- * *Perianth* double, inferior, monopetalous, regular.
- 1. LIGUS'TRUM, [Page 4.] *Calyx* of one leaf, with four bluntish projecting teeth. *Corolla* of one petal, regular, in four segments. *Berry* of two cells, with two seeds in each.
- ** *Perianth* double, inferior, monopetalous, irregular. *Seeds* inclosed in a *pericarp*.
- 2. VERON'ICA, [Page 5.] *Calyx* of one piece, inferior, persistent, divided into four deep segments. *Corolla* wheel-shaped deeply four-cleft, the lower segments smallest. *Capsule* two-celled.
- 3. PINGUIC'ULA, [Page 17.] *Calyx* permanent, two-lipped, upper three-cleft, the lower bifid. *Corolla* ringent, spurred, and

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five-cleft. *Germen* globose. *Style* very short. *Stigma* of two unequal lobes. *Capsule* one-celled. *Seeds* numerous and attached to a central receptacle.

4. UTRICULA'RIA, [Page 20.] *Calyx* permanent, of two ovate equal leaves. *Corolla* personate, spurred. *Germen* globose. *Style* short. *Stigma* two-lipped. *Capsule* one-celled. *Seeds* numerous, small, attached to a central receptacle.

*** *Perianth* double, inferior, monopetalous, irregular. *Seeds* four, apparently naked.

5. LYCO'PUS, [Page 23.] *Calyx* tubular, permanent, divided into five narrow acute segments. *Corolla* tubular, nearly equal four cleft, the upper segments broadest, and notched. *Stamens* simple.

6. SAL'VIA, [Page 23.] *Calyx* tubular, permanent, unequally two-lipped, the lower bifid, the other three-toothed. *Corolla* labiate tube compressed and dilated upwards, lower lip three lobes, the upper concave. *Filaments* with two divaricated branches, the one only bearing a perfect single-celled *anther*.

**** *Perianth* double, superior.

7. CIRCE'A, [Page 25.] *Calyx* tubular at the base, divided into two ovate obtuse deflexed segments. *Corolla* of two petals alternate with the segments of the calyx, and inserted in it. *Stamens* alternate with the petals. *Capsules* two-celled with one seed in each.

***** *Perianth*, single or none.

8. FRAX'INUS, [Page 27.] *Calyx* absent, or in ovate segment. *Capsule* flat and foliaceous, at the extremity, two-celled with a seed in each cell. *Seed* solitary, flat, brown, and pendulous. *Flowers* sometimes without stamens, rare with stamens only.

9. LEM'NA, [Page 29.] *Perianth* single, membranous, inflated. *Fruit* a thin transparent membraneous utricle, single-seeded.

10. CLA'DIUM, [Page 32.] *Perianth* single, glumaceous. *Glumes* concave, of one piece, single-flowered, outer ones smaller mostly barren. *Fruit* a nut, with three slight angles covered with a loose coat, and destitute of bristles at the base.

(See *Salicornia* in Class I. *Schænus* in Class III. *Lepidium* and *Coronopus* in Class XV. *Carex* in Class XXI.)

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ORDER II. DIGYNIA.—2 *Pistils*.

1. *ANTHOXAN'THUM*, [Page 33.] *Glumes* of two unequal valves, containing one *perfect* and two *imperfect florets*; the middle floret perfect. *Glumella* of two small awnless valves; the lateral florets each reduced to a single awned valve.
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CLASS III. TRIANDRIA.—3 *Stamens*.

ORDER 1. MONOGYNIA.—1 *Pistil*.

1. *VALERIA'NA*, [Page 24.] *Calyx* a thick slightly crenated margin, ultimately expanding into a feathery *pappus*. *Corolla* of one piece, tubular, the limb five-cleft, gibbous or spurred on one side at the base. *Fruit* single-seeded, surrounded at the top with the feathery *pappus*.
2. *FE'DIA*, [Page 36.] *Calyx* three to five unequal teeth, first very small, at length crowning the fruit. *Corolla* of one petal, gibbous at the base, the limbs of five unequal segments. *Capsule* indehiscent, of one fertile and two abortive cells.
3. *CRO'CUS*, [Page 39.] *Perianth* divided into six equal coloured segments, its tube longer than the limb, and enveloped in two or more membranous *sheaths*. *Stigma* three-lobed, dilated, folded, and variously cut and jagged at the extremity.
4. *TRICHON'EMA*, [Page 42.] *Perianth* divided into six deep equal segments; its tube shorter than the limb, and enveloped in a *sheath* longer than the tube. *Filaments* short, hairy. *Stigma* very slender, deeply divided, its lobes bipartite, spreading. *Capsule* three-celled. *Seeds* globose and numerous.
5. *IRIS*, [Page 43.] *Perianth* single, of six unequal segments, three alternate ones larger and reflexed. *Stigmas* three, resembling petals, and forming a covering to the oblong *anthers*.

** *Flowers inferior, glumaceous. Seed single.*
6. *CY'PERUS*, [Page 44.] *Flowers* in spikes. *Spikelets* two-ranked, imbricated, many-flowered. *Glumes* of one keeled valve, generally fertile, equal. *Bristles* none. *Style* simple, deciduous.

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7. SCHÆ'NUS, [Page 46.] *Spikelets* one to three-flowered. *Glumes* two, ranked, the outer ones smaller, barren. *Bristles* very small, or none. *Style* jointed, or deciduous.
8. RHYNCHOS'PORA, [Page 46.] *Spikelets* few-flowered. *Glumes* of one valve, imbricated on all sides, the outer ones smaller, barren. *Bristles* various in number, spiny, and shorter than the glumes. *Style* bifid, dilated at the base, more or less articulated, persistent, and crowning the *fruit*.
9. SCIR'PUS, [Page 48.] *Glumes* of one valve, imbricated on all sides, the outer ones sometimes barren. *Bristles* sometimes wanting. *Style* simple, deciduous. *Fruit* terminating in a point.
10. ELEO'CHARIS, [Page 52.] *Spike* terminal, solitary. *Glumes* of one valve, imbricated on all sides, mostly all fertile. *Bristles* four to twelve, finely toothed, rarely absent. *Style* dilated at the base, and jointed upon the germen. *Stigmas* two or three. *Fruit* lenticular or triangular, crowned by the indurated base of the style. *Stem* erect, simply sheathed at the base.
11. ELIO'GETON, [Page 54.] *Spike* terminal. *Glumes* nearly equal, of one valve, imbricated on all sides, all fertile. *Bristles* absent. *Style* deciduous. *Fruit* tipped with a short point.
12. BLYS'MUS, [Page 55.] *Spike* terminal, compressed. *Spikelets* bracteated, arranged in a distichous manner on a slightly zig-zag rachis. *Glumes* of one valve, imbricated on all sides, outer ones the largest, barren. *Bristles* often absent. *Fruit* compressed, terminated by the tapering persistent style.
13. ERIOPHO'RUM, [Page 56.] *Spikes* terminal, solitary or numerous. *Glumes* of one valve, imbricated on all sides, nearly equal. *Style* deciduous. *Stigmas* three. *Fruit* with very long silky hairs springing from the base.
14. NAR'DUS, [Page 61.] *Glumes* wanting. *Glumelles* two unequal lanceolate valves, the outer one the largest.

ORDER II. DIGYNIA.—2 Pistils.

- * *Flowers* paniced; (compact, appearing like a spike, or spreading)
 † *Spikelets* single-flowered.
15. ALOPECU'RUS, [Page 74.] *Panicle* spiked. *Glumes* of two

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simple nearly equal valves, mostly united at the base. *Glumella* of one valve, with an awn arising from the base.

16. PHAL'ARIS, [Page 78.] *Panicle* contracted, or spreading. *Glumes* two, equal, keeled, longer than the *Glumella*. *Glumelles* of two equal awnless valves, at length forming an indurated covering to the seed, and accompanied at its base with one or two unequal imperfect florets.
17. AMMO'PHILA, [Page 80.] *Panicle* spiked. *Glumes* nearly equal, keeled. *Glumelles* shorter than the glumes, hairy at the base, the *outer* valve awned beneath the bifid apex.
18. GASTRIDIDIUM, [Page 81.] *Panicle* contracted, spiked. *Glumes* two, unequal, awnless, unequally swelled at the base, much longer than the *glumelles*, which form a covering to the seed; the *outer* valve mostly with a dorsal awn.
19. MIL'IUM, [Page 81.] *Panicle* spreading. *Glumes* two, equal, flattish, awnless, ribbed. *Glumelles* two, equal, shorter than the glumes, smooth, shining, ribless, without awns, forming a hard, permanent covering to the seed.
20. PHE'UM, [Page 82.] *Panicle* spiked, compact. *Glumes* nearly equal, acuminate, or the keel terminating in an awn: *Glumelles* two, smaller, awnless, membranous. *Seed* oblong, loose.
21. LAGU'RUS, [Page 86.] *Panicle* spiked, ovate. *Glumes* of two equal fringed valves, terminating in feathery awns. *Glumella* of two unequal valves, external one the largest, with a dorsal awn, bifid at the apex; the lobes, long, rough, awn-like.
22. STI'PA, [Page 87.] *Panicle* erect, or branched. *Glumes* of two nearly equal valves, longer than the *glumella*. *Glumella* of two involute valves, the external one bearing from its apex a long twisted *awn*, jointed at the base, and finally separating at the joint.
23. POLYPO'GON, [Page 87.] *Panicle* contracted, somewhat spiked. *Glumes* of two equal awned valves. *Glumella* of two unequal valves, smaller than the glumes, the *outer* largest, obtuse, awned at the extremity.
24. CALA'MAGROSTIS, [Page 89.] *Panicle* loose. *Glumes* two, longer than the *glumella*. *Glumella* of two unequal valves, surrounded with hairs at the base, the *outer* valve awned beneath the bifid apex.

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26. AGROS'TIS, [Page 91.] *Panicle* loose. *Glumes* two, unequal, longer than the glumelles. *Glumelles* two, unequal, the shorter valve largest, with or without an awn, the inner one sometimes wanting.
 †† *Spikelets* two or three-flowered.
26. CATABRO'SA, [Page 96.] *Panicle* loose or close. *Spikelets* two or three flowered, sometimes with a fourth imperfect floret. *Glumes* unequal, membranous, obtuse, much shorter than the florets. *Glumelles* nearly equal, ribbed, awnless, the extremity truncated, erose.
27. AI'RA, [Page 96.] *Panicle* loose or close. *Spikelets* two flowered. *Glumes* unequal. *Glumelles* unequal, the outer valve mostly awned near the base. *Fruit* free.
28. HOL'CUS, [Page 102.] *Panicle* loose. *Spikelets* two flowered. *Glumes* nearly equal, longer than the florets; lower floret perfect and awnless; upper with stamens only, and awned. *Fruit* coated with the indurated glumelles.
20. ARRHENATH'ERUM, [Page 104.] *Panicle* loose. *Glumes* two, unequal, two flowered; lower floret with stamens only, and a long jointed *awn*, arising from near the base of the outer valve; the *upper* perfect, and the outer valve with a short straight bristle near the apex.
30. PANI'CUM, [Page 105.] *Panicle* erect, compound. *Glumes* two, unequal, two-flowered; the lowest smallest, pointed or awned. *Florets* dissimilar. *Glumelles* of the fertile floret two, cartilaginous, the external one concave, the internal plane; *glumelles* of the neuter or male floret, one or two; the external membranous, pointed, or awned; the inner smaller, often absent.
31. SETA'RIA, [Page 106.] *Panicle* spiked, cylindrical. *Glumes* two, unequal, two-flowered, the *spikelets* supported on short branched pedicles, two or three of which are supported by a bristly *involucre*. *Florets* dissimilar. *Glumelles* of the perfect floret two, unequal, cartilaginous; *glumelles* of the neuter or male floret, one or two; membranous; the smaller one sometimes absent.
32. SESLE'RIA, [Page 107.] *Panicle* spiked. *Glumes* two, nearly equal, pointed or awned at the apex; *glumelles* nearly equal; the *outer* jagged, awned, at the apex; the inner bifid.
33. HIERO'CHLOE, [Page 108.] *Panicle* spiked. *Glumes* two,

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nearly equal, three-flowered, the two lateral florets neuter, each containing three stamens; the terminal one perfect, containing two stamens and pistils. *Glumelles* nearly equal, with or without an awn.

34. ME'LICA, [Page 109.] *Panicle* loose. *Spikelets* one or more flowered, with the rudiments of one or more imperfect ones. *Glumes* two, nearly equal, about as long as the florets. *Glumelles* two, unequal, awnless, becoming hard and investing the fruit.
35. MOL'INIA, [Page 110.] *Panicle* loose. *Spikelets* two or more flowered, and sometimes with an imperfect floret. *Glumes* two, unequal, much shorter than the florets. *Glumelles* two, nearly equal, awnless.
††† *Spikelets* three, or mostly many-flowered.
36. PO'LA, [Page 111.] *Panicle* loose. *Spikelets* three or many-flowered. *Glumes* two, shorter than the florets. *Glumelles* two, nearly equal, awnless.
37. TRIO'DIA, [Page 122.] *Panicle* racemed. *Spikelets* many-flowered. *Glumes* two, nearly equal. *Glumelles* two, unequal; external one with three nearly equal teeth; the middle one stiff, straight.
38. BRI'ZA, [Page 123.] *Panicle* loose. *Spikelets* many-flowered. *Glumes* two, equal. *Glumelles* two, unequal, awnless; the outer convex, swelled at the base; the inner smaller, flat. *Fruit* closely invested with the glumelles.
39. FES'TUCA, [Page 124.] *Panicle* loose or contracted. *Spikelets* many-flowered. *Glumes* two, unequal. *Glumelles* two, the outer valve acuminate or awned at the apex.
40. BRO'MUS, [Page 131.] *Panicle* loose. *Spikelets* many-flowered. *Glumes* two, unequal. *Glumelles* two, the outer awned below the bifid apex.
41. AVE'NA, [Page 138.] *Panicle* loose. *Spikelets* two or more flowered. *Glumes* two, nearly equal. *Glumelles* two, lanceolate, nearly equal; the outer bifid at the apex, and bearing a twisted dorsal awn.
42. DACTY'LIS, [Page 144.] *Panicle* loose or contracted; branches, solitary, the lower ones long, the upper very short. *Spikelets* clustered, three or four-flowered. *Glumes* two, unequal. *Glumelles* two, lanceolate, nearly equal, the outer with a short awn.

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43. CYNOSU'RUS, [Page 145.] *Panicle* spiked. *Spikelets* two or many-flowered, fixed upon pectinate bractæ. *Glumes* two equal. *Glumelles* two, nearly equal, the outer pointed or awned at the apex.
44. ARUN'DO, [Page 147.] *Panicle* loose. *Spikelets* many-flowered; the lower floret bearing stamens only, and naked; the upper perfect, and surrounded by a tuft of hairs. *Glumes* two, unequal, shorter than the florets. *Glumelles* two unequal.

** *Flowers* spiked. *Spikelets* sessile, upon a common stalk or rachis.

† *Spikelets* inserted on all sides.

45. ELY'MUS, [149.] *Inflorescence* spiked. *Spikelets* two or three from the same point, two or three-flowered. *Glumes* two both on one side of the spikelet. *Glumelles* two, nearly equal.
46. HOR'DEUM, [Page 150.] *Inflorescence* spiked. *Spikelets* single-flowered, three together, the lateral ones mostly imperfect. *Glumes* two, lateral. *Glumelles* two, the outer valve awned. *Fruit* closely invested with the glumelles.
47. TRIT'ICUM, [Page 154.] *Inflorescence* spiked. *Spikelets* many-flowered, all fertile. *Glumes* two, nearly equal placed transversely, the sides directed to the rachis. *Glumelles* two, lanceolate; the external one mostly awned at the apex.
48. BRACHY'PODIUM, [Page 160.] *Inflorescence* somewhat racemose. *Spikelets* alternate, somewhat compressed, many-flowered; footstalks short. *Glumes* unequal, transverse. *Glumelles* two, the outer valve mostly awned at the extremity.
49. LO'L'IUM, [Page 162.] *Inflorescence* a two-sided spike. *Spikelets* alternate, compressed, many-flowered. *Gluma* a single valve. *Glumelles* two, nearly equal; the outer valve awnless, or with an awn below the apex.
50. ROTTBOL'LIA, [Page 165.] *Inflorescence* a two-sided spike. *Spikelets* alternate, one or two-flowered. *Glumes* of two valves, sometimes single, lateral. *Glumelles* two, awnless imbedded in the notches of the rachis.
51. KNA'PIA. [Page 166.] *Inflorescence* racemose, simple. *Glumes* two, truncated, nearly equal, awnless. *Glumelles* two, equal, obtuse, awnless, hairy.

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†† *Flowers on one-sided Spikes.*

52. SPARTINA, [Page 167.] *Inflorescence* a one-sided spike. *Spikelets* one-sided, single-flowered, in two rows pressed close to the rachis. *Glumes* two, unequal, lanceolate, compressed, pointed or awned. *Glumelles* two, nearly equal, lanceolate, compressed. *Styles* partly united.
53. CYNODON, [Page 168.] *Inflorescence* a compound spike. *Spikelets* one-sided, in two or more rows. *Glumes* two, nearly equal, keeled, spreading. *Florets* single-flowered. *Glumelles* shorter than the glumes, awnless, compressed, keeled; the *outer* valve broadest, enwrapping the shorter *inner* one, becoming hard, and forming a coat to the ovate seed.
54. DIGITARIA, [Page 169.] *Inflorescence* a compound spike. *Spikelets* arranged on a zig zag rachis; *Florets* two: the *outer* sometimes wanting: the *perfect* one of two cartilaginous, nearly equal, valves; the *imperfect* one a single valve. *Fruit* coated with the hardened glumelles.

ORDER III. TRIGYNIA.—3 *Pistils*.

55. MONOTIA, [Page 171.] *Calyx* inferior, of two ovate abrupt pieces, united at the base. *Corolla* of five unequal petals, united at the base. *Capsule* one-celled, with three valves and three seeds.
56. HOLOSTEUM, [Page 172.] *Calyx* inferior, of five ovate pieces. *Petals* five, jagged towards the extremity. *Capsule* one-celled, opening at the apex with six teeth. *Seeds* numerous, furrowed on one side, and dotted.
56. POLYCARPON, [Page 172.] *Calyx* inferior, of five ovate mucronate pieces, with membranous margins, and united at the base. *Petals* five, notched at the extremity. *Stamens* from three to five. *Capsule* three-valved, many-seeded.

CLASS IV. TETRANDRIA.—4 *Stamens* (EQUAL).

ORDER I. MONOGYNIA.—1 *Pistil*.

- * *Perianth* double. *Corolla* of one piece, superior. *Seed* single.
1. DIPSAOUS [Page 173.] *Flowers* in heads, surrounded by a

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many-leaved *involucrum*. *Involucellum* with four sides and eight little excavations. *Calyx* cup-shaped, thick, clothed with short rigid hairs. *Receptacle* with spiny glandular *bractea*, shorter than the leaves of the *involucrum*.

2. KNAU'TIA, [Page 176.] *Flowers* in heads, surrounded by many-leaved *involucrum*. *Involucellum* compressed, with four little excavations. *Calyx* cup-shaped. *Fruit* placed upon a short stalk. *Receptacle* bristly.

3. SCABIO'SA, [Page 177.] *Flowers* in heads, surrounded by many-leaved *involucrum*. *Involucellum* nearly cylindrical with eight little excavations and a membranous plain limb. *Calyx* with a limb consisting of about five bristles.

** *Perianth* double. *Corolla* of one piece, superior. *Seeds* two. *Leaves* in whorls.

4. GA'LIIUM, [Page 178.] *Corolla* wheel or bell-shaped, four-lobed, five cleft. *Fruit* a dry indehiscent pericarp, with two cells and two seeds, not crowned by the calyx.

5. RU'BIA, [Page 188.] *Corolla* rotate or campanulate, with five three to five spreading segments. *Fruit* a succulent smooth, two-lobed berry.

6. SHERAR'DIA, [Page 189.] *Corolla* funnel-shaped with five segments. *Fruit* crowned with the persistent teeth of the calyx.

7. ASPER'ULA, [Page 189.] *Corolla* funnel-shaped, with five three to four segments. *Fruit* not crowned with the calyx.

*** *Perianth* double. *Corolla* of one piece inferior. *Seeds* two, or many.

8. EXACUM, [Page 192.] *Calyx* of one piece, with a four-lobed extremity. *Corolla* four-cleft salver-shaped, with a globose tube. *Anther* bursting longitudinally. *Stigma* capitate entire. *Capsule* one-celled, two valved.

9. PLANTA'GO, [Page 192.] *Corolla* with four reflexed segments. *Stamens* very long. *Capsule* of two or four-cells, membranous, two or many-seeded, bursting with a transverse incision.

10. CENTUN'CULUS, [Page 196.] *Corolla* of one piece, the tube swelling, limb four-cleft. *Stamens* short. *Capsule* of one cell, many-seeded, bursting with a transverse incision.

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**** *Perianth double. Corolla of four petals.*

11. EPIME'DIUM, [Page 196.] *Calyx* of four pieces, deciduous, *petals* four, inferior, with a large inflated *nectary* at the base. *Pod* oblong, two valved, one-celled, many seeded.
12. COR'NUS, [Page 189.] *Calyx* of four deciduous pieces. *Corolla* superior. *Drupe* with a two-celled, two-seeded, *nut*.

(See *Euonymus* in *Class V.*; *Cardamine* and *Coronopus* in *Class XV.*)

***** *Perianth double.*

13. PARIETA'RIA, [Page 199.] *Flowers* polygamous, surrounded by a two-leaved *involucrum*. *Perianth* single, inferior, four-cleft, persistent. *Stamens* at first incurved, at length expanded by the elastic force of the filaments. *Fruit* single seeded, enclosed by the enlarged perianth.
14. ALCHEMI'LLA, [Page 201.] *Perianth* inferior, eight-cleft; the four outer alternate ones smallest. *Fruit* a solitary or double *nut*, surrounded by the persistent perianth. *Seed* suspended.
15. ISNARDIA, [Page 202.] *Calyx* superior, the limb of four lobes, persistent. *Petals* four wanting. *Stigma* capitate. *Capsule* obovate, with four angles, four valves, four cells, and many seeded.
16. SANGUISOR'BA, [Page 203.] *Perianth* superior, of four coloured lobes, with two or four scales at the base. *Nuts* one or two, surrounded by the dry persistent tube of the perianth. *Seed* suspended.

ORDER II. DIGYNIA.—2 *Pistils*.

17. BUFFONIA, [Page 204.] *Calyx* of four pieces. *Corolla* of four entire petals. *Capsule* compressed, one-celled, two-valved, two-seeded.

(See *Alchemilla*, in ORDER II. *Gentiana* and *Cuscuta* in *Class V.*)

ORDER III. TETRAGYNIA.—4 *Pistils*.

18. TLEX, [Page 205.] *Calyx* persistent, of four or five teeth. *Corolla* of four or five petals, distinct or combined at the base. *Stamens* four, sometimes five. *Fruit* fleshy, containing four or five hard one-seeded *nuts*. *Seeds* inverted.
19. POTAMO'GETON, [Page 207.] *Flowers* in spikes, arising from a sheathing *bractea*, or *spatha*. *Perianth* single of four

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pieces. *Stamens* with the *anthers* sessile, opposite pieces of the perianth. *Pistils* four, alternating with stamens, becoming compressed. *Nuts*, each contain a suspended, curved, more or less spiral *seed*.

20. RUP'PIA, [Page 217.] *Flowers* two, from the base of the leaf. *Calyx* and *corolla* wanting. *Seeds* four, convex at one side, slightly keeled on the other, and elevated on a short peduncle.
21. SAGI'NA, [Page 217.] *Calyx* inferior, of four permanent leaves. *Petals* four, shorter than the calyx, sometimes absent. *Capsule* of one-cell, and four equal valves. *Seeds* numerous, each attached to the receptacle by its own stalk.
22. MÖEN'CHIA, [Page 218.] *Calyx* inferior of four permanent equal pieces. *Petals* four, shorter than the calyx. *Capsule* of one-cell, opening at the summit, with eight or ten minute teeth. *Seeds* numerous, attached to the receptacle.
23. TILLÆ'A, [Page 218.] *Calyx* of three or four segments. *Capsules* three or four oblong, recurved, bursting lengthwise, two-celled, two-valved, two-seeded.
24. RADIOLA, [Page 219.] *Calyx* of four pieces united together half way up each, mostly three-cleft. *Petals* four, undivided. *Capsule* of eight cells, and eight valves. *Seeds* ovate, solitary, compressed.

(See *Cerastium tetrandum* in Class X.)

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CLASS V. PENTANDRIA.—5 *Stamens*.

ORDER 1. MONOGYNIA.—1 *Pistil*.

- * *Perianth double, inferior. Corolla monopetalous. Ovarium of four lobes. Style simple in the middle. Fruit four nuts, (apparently naked). Nat. Ord. Boragin'æ, Juss. (Asperifoliæ, Linn.)*

† *Corolla naked at the orifice.*

1. E'CHIUM, [Page 220.] *Corolla with a short tube, irregular, the limb campanulate, obliquely five lobed, the two upper largest, the lower acute and reflexed. Stigma deeply cloven. Nuts covered with little tubercles.*
2. PULMONA'RIA, [Page 221.] *Calyx campanulate, with five angles, five-cleft. Corolla funnel-shaped, five lobed. Stigma obtuse.*
3. LITHOSPER'MUM, [Page 223.] *Calyx in five deep segments. Corolla funnel-shaped, five lobed. Stigma obtuse, bifid. Nuts smooth, or wrinkled.*

†† *Corolla with scales or valves at the orifice.*

4. SYMPHY'TUM, [Page 226.] *Calyx five-cleft. Corolla cylindrical, swollen upwards, limb with five short round lobes, its orifice closed with subulate connivent scales.*
5. BORA'GO, [Page 228.] *Calyx five-cleft. Corolla wheel-shaped, the limb of five mostly spreading segments, the orifice of the tube closed with five obtuse emarginate scales.*
6. LYCOP'SIS, [Page 229.] *Calyx five-cleft. Corolla funnel-shaped, the limb of five lobes, the tube curved, its orifice clothed with five convex connivent scales.*
7. ANCHU'SA, [Page 230.] *Calyx five-cleft. Corolla funnel-shaped, the limb of five lobes, the tube straight, its orifice closed with five convex connivent scales.*
8. MYOSO'TIS, [Page 231.] *Calyx five-cleft. Corolla salver-shaped, the limb of five flat obtuse lobes, tube short, its orifice nearly closed with smooth rounded scales. Nuts smooth.*

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9. ASPERU'GO, [Page 239.] *Calyx* five-cleft, unequal, with intermediate teeth. *Corolla* funnel-shaped, with a short tube, its orifice closed with convex connivent scales. *Nuts* four, attached to the persistent style, compressed, covered by the folded compressed calyx.
10. CYNOGLOS'SUM, [Page 239.] *Calyx* five-cleft. *Corolla* funnel-shaped, the *tube* short, its orifice closed with five convex connivent scales. *Nuts* four, depressed, mucronated, attached to the base of the persistent style.
- ** *Perianth* double, inferior. *Corolla* monopetalous. *Seeds* inclosed within a capsule.
† *Capsule* of one cell, with a central placenta.
11. CYCLA'MEN, [Page 241.] *Calyx* campanulate, five-cleft. *Corolla* with campanulate tube, the limb of five reflex segments. *Capsule* globose, opening with five teeth.
12. PRI'MULA, [Page 242.] *Calyx* tubular, five toothed. *Corolla* salver-shaped, or funnel-shaped, the tube about the length of the calyx, cylindrical, dilated at the orifice, the limb of five lobes. *Capsule* ovate, opening with five or ten valves.
13. HOTT'ONIA, [Page 247.] *Calyx* five parted. *Corolla* salver-shaped, with a short tube, the limb of five flat lobes. *Stamens* nearly sessile at the mouth of the tube. *Capsule* globose, tipped with the long persistent style.
14. ANAGAL'LIS, [Page 248.] *Calyx* five parted. *Corolla* wheel-shaped, five lobed. *Stamens* hairy, inserted in the base of the corolla. *Capsule* globose, bursting all round transversely.
15. LYSIMA'CHIA, [Page 250.] *Calyx* five parted. *Corolla* wheel-shaped, five lobed. *Stamens* scarcely hairy, inserted in the base of the corolla. *Capsule* globose, opening with five valves.
†† *Capsule* of one cell, with parietal placenta.
16. MENYAN'THES, [Page 254.] *Calyx* five parted. *Corolla* funnel-shaped, the limb of five spreading segments, the inner margin bearded within. *Stigma* capitate, two lobed. *Capsule* two valved. *Seeds* numerous. *Leaves* ternate.
17. VILLAR'SIA, [Page 255.] *Calyx* five parted. *Corolla* rotate, limb of five spreading segments, the margins reflex in estivation, bearded in the throat, five glan-

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alternating with the stamens. *Stigmas* five-cleft. *Capsule* two valved. *Seeds* numerous. *Leaves* simple.

††† *Capsule of two or five cells.*

18. ERYTHÆ'A, [Page 257.] *Calyx* five-cleft. *Corolla* funnel-shaped, its limb short. *Anthers* after bursting, spirally twisted. *Style* erect. *Stigmas* two. *Capsule* linear, of two cells, with the margin of the valves turned inwards.
19. POLEMO'NIUM, [Page 260.] *Calyx* five-cleft. *Corolla* wheel-shaped, with a short tube, the limb of five lobes. *Stamens* dilated and hairy at the base, closing the mouth of the tube. *Stigmas* three-cleft. *Anthers* incumbent. *Capsule* of three cells, and three valves. *Seeds* numerous.
20. CONVOL'VULUS, [Page 261.] *Calyx* five-cleft. *Corolla* bell-shaped, folded in five plaits. *Stigmas* two. *Capsule* from one to four cells, with as many valves. *Seeds* one or two in each cell.
21. AZA'LEA, [Page 264.] *Calyx* five-cleft. *Corolla* bell-shaped, regular. *Stamens* straight, inserted at the base of the corolla. *Anthers* bursting longitudinally. *Capsule* two or three valved, two or three celled, dissepiments formed by the inflexed margins of the bifid valves. *Seeds* attached to a central at length free receptacle.
22. VERBAS'CUM, [Page 264.] *Calyx* five parted. *Corolla* wheel-shaped, of five unequal segments. *Filaments* declining, mostly hairy. *Capsule* ovate, or globose, with two cells and two valves.
23. DA'TURA, [Page 273.] *Calyx* tubular, with five angles and five teeth, falling away, and leaving a broad persistent orbicular base. *Corolla* funnel-shaped, with a long tube, the limb plaited with five angles and five lobes. *Stigma* of two plates. *Capsules* spinous, or smooth, four celled, frequently with imperfect dissepiments, four valves, and many seeded.
24. HYOSCY'AMUS, [Page 275.] *Calyx* tubular, five-cleft, persistent. *Corolla* funnel-shaped, the limb oblique, somewhat unequal, five lobed. *Capsule* ovate, furrowed on each side, swelled at the base, contracted above, opening with a transverse aperture. *Seeds* numerous.

†††† *Fruit a Berry.*

25. ATRO'PA, [Page 278.] *Calyx* bell-shaped, five-cleft. *Corolla*

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bell-shaped, with five equal lobes. *Stamens* distant. *Berry* within the calyx, globose, two celled.

26. SOLA'NUM, [Page 281.] *Calyx* five or ten partite. *Corolla* wheel-shaped. *Anthers* connivent, oblong, opening with two pores at the extremity. *Berry* roundish, two or more celled.

††††† *Fruit in two follicles.*

27. VIN'CA, [Page 283.] *Calyx* five-partite. *Corolla* salverform, shaped, the segments oblique, spirally imbricated in the bud, the tube long, its orifice prominent, with five angled lobes. *Anthers* closing over the pistil. *Stigma* crowned with a tuft of hairs. *Follicles* with naked seeds.

(See *Gentiana* in Ord. 2.)

*** *Perianth* double, superior. *Corolla* monopetalous.

† *Fruit a capsule.*

28. SA'MOLUS, [Page 286.] *Calyx* half superior, five-cleft. *Corolla* somewhat bell-shaped, with a short tube, its mouth surrounded with five scales (sterile stamens), alternating with five stamens, and opposite the segments of the limb. *Capsule* half superior, two celled, opening with five valves. *Seeds* fixed to a large central placenta.

29. LOBE'LIA, [Page 287.] *Calyx* five-cleft. *Corolla* irregular, two lipped, five-cleft. *Stamens* united around the pistil. *Stigma* blunt, mostly two lobed and hairy. *Capsule* two or three celled, opening at the apex with two or three valves.

30. JAS'ONE, [Page 290.] *Calyx* five-cleft. *Corolla* wheel-shaped, in five deep narrow segments. *Anthers* united at their base. *Stigma* club-shaped, bifid. *Capsule* two celled, opening at the apex. (*Flowers collected into a dense head, with a many leaved involucre.*)

31. PHYTEU'MA, [Page 291.] *Calyx* five-cleft. *Corolla* wheel-shaped, in five deep narrow segments. *Filaments* dilated at the base. *Anthers* free. *Stigma* three-cleft. *Capsule* of two or three cells, opening on the side. (*Flowers collected into a dense bracteated head or spike.*)

32. CAMPANU'LA, [Page 292.] *Calyx* five-cleft. *Corolla* bell-shaped or wheel-shaped, with five larger or smaller segments, the mouth of the tube closed with the dilated bases of the filaments. *Anthers* free. *Stigma* two to five-cleft.

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Capsule from two to five celled, opening on the side, rarely at the extremity.

33. PRISMATO'CARPUS, [Page 304.] *Calyx* five-cleft. *Corolla* wheel-shaped, with a flat limb. *Capsule* oblong, prismatic, two or three celled, opening near the top.

†† *Fruit a berry.*

34. LONICE'RA, [Page 305.] *Calyx* of five small teeth. *Corolla* tubular, with an irregular five-cleft limb. *Stigma* capitate. *Berry* from one to three celled, one or many seeded.

**** *Perianth double, inferior. Corolla of four or five petals.*

† *Flowers regular.*

35. RHAM'NUS, [Page 308.] *Calyx* urceolate, the limb four or five-cleft. *Corolla* of four or five petals, or wanting. *Stamens* opposite the petals, and with them inserted into the tube of the calyx. *Styles* from two to four, united or distinct. *Fruit* fleshy, of two to four cells, each containing a single seed.

36. EUO'NYMUS, [Page 311.] *Calyx* flat, four or five-cleft, with a peltate disk at the bottom. *Petals* four or five, inserted into the margin of the disk. *Stamens* four or five, alternating with the petals, and inserted into the disk. *Capsules* with three to five angles, and as many cells. *Seeds* one in each cell, with a coloured fleshy *arillus*.

†† *Flowers irregular.*

37. IMPA'TIENS, [Page 313.] *Calyx* of two deciduous leaves. *Petals* four, very unequal, the lower one elongated at the base into a spur. *Anthers* united, three of which are two celled, and two one celled. *Stigma* five, united. *Capsule* long, tapering, of five valves, bursting suddenly at the base, and rolling backwards.

38. VIO'LA, [Page 314.] *Calyx* of five sepals, unequal, and appendiculated at the base. *Petals* unequal, the lower one spurred at the base. *Stamens* with dilated *filaments*, the *anthers* united around the pistil, the two lower ones with processes at the base. *Capsule* of one cell, opening with three elastic valves.

***** *Perianth double, superior. Corolla of five petals.*

39. RI'BES, [Page 324.] *Calyx* of four or five segments, regular, and bearing the *petals* and *stamens*. *Style* from two to four-cleft. *Fruit* a single celled many seeded *berry*.

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40. HE'DERA, [Page 330.] *Calyx* of five teeth. *Petals* broadest at the base. *Style* simple or divided. *Fruit* a succulent berry, crowned by the calyx, of from three to five cells, and as many seeds.

***** *Flowers incomplete, inferior.*

41. GLA'UX, [Page 332.] *Perianth* single, inferior, bell-shaped, five-cleft, coloured. *Stamens* inserted at the bottom of the perianth. *Stigma* capitate. *Capsule* globose, of one cell, and five valves. *Seeds* about five, attached to a central placenta.

42. ILLE'CEBRUM, [Page 332.] *Calyx* in five nearly separate segments, thickened and laterally compressed, cartilaginous, terminating in a slender awl-shaped point. *Petals* wanting, or reduced to five alternate awl-shaped scales. *Style* short. *Stigmas* two, obtuse. *Capsule* surrounded by the calyx, of one cell, marked with five longitudinal stria. *Seed* single, attached to the side of the cavity.

***** *Flowers incomplete, superior.*

43. THE'SIUM, [Page 334.] *Perianth* four or five-cleft. *Petals* wanting. *Stamens* opposite the segments of the calyx, surrounded with a small fascicle of hairs. *Style* long. *Stigma* obtuse. *Fruit* a single seeded dry or fleshy drupe, crowned by the persistent calyx.

ORDER II. DIGYNIA.—2 Pistils.

* *Perianth double, inferior. Corolla monopetalous.*

44. GENTIANA, [Page 335.] *Calyx* four or five-cleft. *Corolla* funnel or salver-shaped, with a tubular base, the limb five-cleft. *Stamens* inserted into the tube of the corolla. *Styles* sometimes united into one. *Stamens* two. *Capsule* of one cell, with two valves, and marginal placentas.

45. CUS'CUTA, [Page 340.] *Calyx* four or five-cleft. *Corolla* roundish, bell-shaped, the limb of four or five lobes, with as many scales at the base below the stamens. *Capsule* two celled, two seeded, bursting at the base transversely.—*Parasitical twining leafless plants, with long thread-like stems.*

** *Perianth double, superior. Corolla of five petals.* (Nat. Ord. UMBELLIFERÆ. From Genus 46 to 88.)

† *Flowers in heads or simple umbels.*

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46. *HYDROCO'TYLE*, [Page 347.] *Calyx* margin obsolete. *Petals* ovate, entire, acute, with a straight point. *Fruit* compressed at the sides, so as to form two flat nearly orbicular lobes. *Carpels* with five filiform ridges, those of the sides and back nearly obsolete, and the two intermediate ones arched. *Seeds* carinated, compressed.

47. *SANI'CU'LA*, [Page 347.] *Calyx* with a five toothed leafy margin. *Petals* erect, obovate, notched, with a slender inflexed point, as long as the petal. *Fruit* sub-globose, densely clothed with hooked prickles, without *ridges*, but with many *vittæ*. *General involucre* lobed, *partial* of many lanceolate segments.

48. *ERYN'GIUM*, [Page 350.] *Calyx* with a five toothed leafy margin. *Petals* erect, oblong, notched with a slender abruptly inflexed point the length of the petal. *Fruit* obovate, densely clothed with pointed scales, without ridges or *vittæ*. *Involucre* of several leaves. *Flowers* blue, upon a scaly receptacle, collected into an oblong compact head.

†† *Flowers in compound umbels.*

1. *Fruit laterally compressed, with five primary filiform ridges. Albumen before plane or convex.*

a. *Petals entire.*

49. *BUPLEU'RUM*, [Page 352.] *Calyx* limb obsolete. *Petals* roundish, entire, broad, closely rolled inwards, the sides depressed. *Fruit* laterally compressed, crowned by the recurved *styles* and depressed *disk*. *Carpels* with five equal, winged, acute, filiform, or obsolete *ridges*, the lateral ones forming the margin. *Channels* with or without *vittæ*. *Albumen* plane in front. *Involucre* various. *Flowers* yellow. *Leaves* undivided.

50. *API'UM*, [Page 355.] *Calyx* limb obsolete. *Petals* roundish, entire, with an involute point. *Fruit* roundish, laterally contracted, double. *Carpels* with five filiform equal *ridges*, the two lateral ones forming the margin. *Channels* with single *vittæ*, the outer ones sometimes having two or three. *Albumen* very convex at the back, plane in front. *Involucre* wanting. *Flowers* white.

a. *SWERT'IA*, [Page 335.] *Calyx* four or five-partite. *Corolla* wheel-shaped, the limb of five segments, plane, with a fimbriated gland at the base of each. *Capsule* of one cell, and two valves, with marginal placentas. *Seeds* numerous.—Named after *Emanuel Swert*, a Dutch Botanist, who published a *Florilegium* in 1612.

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51. PETROSELI'NUM, [Page 356.] *Calyx* limb obsolete. *Petals* roundish, entire, slightly emarginate, with a narrow incurved point. *Fruit* ovate, laterally contracted, nearly double. *Carpels* with five filiform equal *ridges*, the two lateral ones forming the margin. *Channels* with single *vittæ*. *Albumen* very convex at the back, plane in front. *General involucre* of a few, *partial* of many, segments.
52. TRI'NIA, [Page 358.] *Calyx* limb an obsolete margin. *Petals* of the *barren plant* lanceolate, with a narrow inflexed point, those of the *fertile* ovate, with a short inflexed point. *Fruit* ovate, laterally compressed. *Carpels* with five prominent filiform equal *ridges*, the two lateral ones forming the margins. *Channels* with obscure *vittæ*, but a distinct channel under each ridge. *Albumen* very convex at the back, plane in front. *Involucre* various.
53. HELOSCIA'DIUM, [Page 359.] *Calyx* limb of five teeth, or obsolete. *Petals* ovate, entire, with a straight or inflexed point. *Fruit* ovate, or oblong, laterally compressed. *Carpels* with five filiform prominent equal *ridges*, the lateral ones forming the margins. *Channels* with single *vittæ*. *Albumen* convex at the back, plane in front. *Involucre* various.
- b. *Petals* obcordate, with a small inflexed point. *Calyx* obsolete.
54. SI'SON, [Page 362.] *Calyx* margin obsolete. *Petals* roundish, deeply notched and incurved with an inflexed point. *Fruit* ovate, laterally compressed. *Carpels* with five filiform equal *ridges*, the lateral ones forming the margins. *Channels* with short single club-shaped *vittæ*. *Albumen* convex at the back, plane in front. *General and partial involucre* of few segments.
55. ÆGOPO'DIUM, [Page 363.] *Calyx* margin obsolete. *Petals* obovate, notched and curved with an inflexed point. *Fruit* oblong, laterally compressed. *Carpels* with five filiform *ridges*, the lateral ones forming the margins. *Channels* without *vittæ*. *Albumen* roundish, convex, somewhat plane in front. *General and partial involucre* wanting.
56. CA'RUM, [Page 364.] *Calyx* margin obsolete. *Petals* obovate, notched and curved with an inflexed point. *Fruit* oblong, laterally compressed. *Carpels* with five filiform *ridges*, the lateral ones forming the margin. *Channels*

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with single *vittæ*. *Albumen* roundish, convex, plane in front. General and partial *involucre* various.

57. *BUNUM*, [Page 365.] *Calyx* margin obsolete. *Petals* obovate, slightly notched with an inflexed point. *Fruit* linear-oblong, laterally compressed, crowned by the conical disk and straight styles. *Carpels* with five equal obtuse filiform *ridges*, the lateral ones forming the margins. *Channels* with many *vittæ*. *Albumen* convex at the back, flat in front. General *involucre* none, partial of a few segments.

58. *PIMPINELLA*, [Page 366.] *Calyx* margin obsolete. *Petals* obovate, notched with an inflexed point. *Fruit* ovate, laterally compressed, crowned by the convex disk and long slender style. *Carpels* with five filiform *ridges*, the lateral ones forming the margins. *Channels* with many *vittæ*. *Albumen* roundish at the back, plane in front. *Involucre* wanting.

c. *Petals* obcordate, with a small inflexed point. *Calyx* of five teeth.

§ *Channels* with single *vittæ*.

59. *CICUTA*, [Page 369.] *Calyx* margin of five teeth, leafy. *Petals* obcordate, with an inflexed point. *Fruit* roundish, laterally compressed. *Carpels* with five nearly plane *ridges*, the lateral ones forming the margins. *Channels* with single *vittæ*, which are more prominent in the ripe fruit than the ridges. *Albumen* roundish. General *involucre* none, or of few segments, *partial* of numerous linear segments.

§§ *Channels* with three *vittæ*.

60. *BERULA*, [Page 371.] *Calyx* margin of five teeth. *Petals* obcordate, with an inflexed point. *Fruit* ovate, laterally contracted. *Disk* shortly conical, with a narrow margin. *Styles* reflexed. *Carpels* with five equal filiform *ridges*, the lateral ones before the margin. *Channels* with many *vittæ*. *Albumen* roundish. General and *partial involucre*s of several reflexed lanceolate or pinnate segments.

61. *STUM*, [Page 372.] *Calyx* margin of five teeth. *Petals* obcordate, with an inflexed point. *Fruit* laterally compressed, or contracted. *Disk* flattish, with a depressed margin. *Styles* reflexed. *Carpels* with five equal obtuse filiform *ridges*, the lateral ones forming the margins.

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- obsolete. *Petals* obovate, notched with an inflexed point and very short claw. *Fruit* roundish, or the sides slightly compressed. *Carpels* with five sharp equal winged *ridges*, the lateral ones forming the margin. *Channels* with many *vittæ*. *Albumen* half round. *General involucre* various, *partial* of many segments.
67. SI'LAUS, [Page 383]. *Calyx* margin obsolete. *Petals* obovate oblong, entire, or somewhat notched, with an inflexed point, either sessile or with an appendage at the base. *Fruit* roundish. *Carpels* with five sharp equal somewhat winged *ridges*, the lateral ones forming the margin. *Channels* with many *vittæ*. *Albumen* nearly round. *General involucre* of a few segments, or wanting, *partial* of many segments.
3. *Fruit* with five primary filiform *ridges*, flat at the back, with winged acute or thickened margins. *Albumen* before plane or convex.
- a. *Ridges* very slender, three at the back at equal distances, the lateral ones remote, contiguous to the dilated border, or make part with it.
72. PASTIN'ACA, [Page 389.] *Calyx* margin obsolete, or minutely toothed. *Petals* roundish, entire, rolled inwards with a broad obtuse inflexed point. *Fruit* flattened at the back with a dilated flat margin. *Carpels* with five very slender filiform *ridges*, the three dorsal ones equi-distant, the lateral ones remote, near to the dilated margin. *Channels* with single *vittæ*. *Albumen* flattened. *General* and *partial involucre* of few segments, or wanting.
73. HERA'CLEUM, [Page 390.] *Calyx* margin of five teeth. *Petals* obovate, emarginate, with an inflexed point, the outer ones often radiant, bifid. *Fruit* flattened at the back, with a broad plane margin. *Carpels* with very slender *ridges*, the three dorsal ones equi-distant, the two lateral ones remote, contiguous to the dilated margin. *Channels* with single clavate *vittæ*. *Albumen* flattened. *General involucre* falling away, *partial* of numerous segments.
74. TORDY'LIUM, [Page 392.] *Calyx* margin of five teeth. *Petals* obovate, emarginate, with an inflexed point, the outer ones radiant, bifid. *Fruit* flattened at the back, surrounded by a thickened often crenated accessory margin. *Carpels* with five very slender *ridges*, the dorsal

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ones equi-distant, the lateral ones remote, contiguous to the thickened margin, or sometimes covered over by it. *Channels* with one to three *vittæ*. *Albumen* flattened. *General and partial involucre* of numerous segments.

b. *Ridges slender, equi-distant.*

75. PEUCE'DANUM, [Page 394.] *Calyx* margin of five teeth, sometimes obsolete. *Petals* obovate, emarginate, or entire, with an inflexed point. *Fruit* flattened at the back, with a broad thin margin. *Carpels* with five nearly equi-distant *ridges*, the three dorsal ones filiform, the lateral ones more obsolete, contiguous to or confounded with the dilated margin. *Channels* with one to three *vittæ*. *Albumen* flat in front. *Pericarp* double. *General involucre* various, *partial* of numerous segments.

76. IMPE'RATORIA, [Page 396.] *Calyx* margin obsolete; (the rest as in *Peucedanum*.)

4. *Fruit more or less compressed at the back, with five primary and four secondary ridges, prickly.*

77. DAU'CUS, [Page 397.] *Calyx* of five teeth. *Petals* obcordate, with an inflexed point, the outer ones radiant, bifid. *Fruit* compressed at the back. *Carpels* with five *primary* filiform bristly *ridges*, three at the back, the two lateral ones on the plane of the commissure, the four *secondary* ones more prominent than the rest, and with a single row of prickles. *Channels* under the secondary *ridges*, with single *vittæ*. *Albumen* flat in front. *General and partial involucre* of numerous segments.

5. *Fruit with the margins of the albumen rolled inwards, or deeply channeled in front.*

a. *Fruit prickly.*

78. CAU'CALIS, [Page 399.] *Calyx* of five teeth. *Petals* obcordate, with an inflexed point, the outer ones radiant, and deeply bifid. *Fruit* slightly compressed on the sides. *Carpels* with five *primary* filiform, bristly or prickly *ridges*, three at the back, the two lateral ones on the plane of the commissure, and the four *secondary* *ridges* more prominent, with one or two rows of prickles. *Channels* under the secondary *ridges*, with single *vittæ*. *Albumen* deeply channeled in front. *General and partial involucre* variable.

79. TORI'LIS, [Page 401.] *Calyx* of five teeth. *Petals* obcor-

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date, with an inflexed point, the outer ones radiant, and deeply bifid. *Fruit* with the sides compressed. *Carpels* with five *primary* bristly *ridges*, three at the back, the two lateral ones on the plane of the commissure, the *secondary* ridges obliterated by the numerous prickles, which occupy the whole of the channels, under which are single *vittæ*. *Albumen* deeply channeled in front. *General* and *partial involucre* of numerous segments.

b. *Fruit not prickly, ridges obtuse, sometimes wanting, except at the point.*

80. SCAN'DIX, [Page 404.] *Calyx* an obsolete margin. *Petals* obovate, with an inflexed point. *Fruit* with the sides compressed, and with a very long beak. *Carpels* with five obtuse equal *ridges*, the lateral ones forming the margin. *Channels* without or with scarcely any *vittæ*. *Albumen* roundish, with a deep furrow in front. *General involucre* wanting, or of few segments, *partial* of from five to seven segments.

81. ANTHRIS'CUS, [Page 405.] *Calyx* an obsolete margin. *Petals* obcordate, with an inflexed often very short point. *Fruit* contracted at the sides, beaked. *Carpels* nearly round, without *ridges*, except five on the beak. *Albumen* nearly round, deeply furrowed in front. *General involucre* wanting, *partial* of numerous segments.

82. CHÆROPHYL'LUM, [Page 407.] *Calyx* an obsolete margin. *Petals* obcordate, with an inflexed point. *Fruit* contracted at the sides, beaked. *Carpels* with five very obtuse equal *ridges*, the lateral ones forming the margin, the commissure with a deep furrow. *Channels* with single *vittæ*. *Albumen* roundish, deeply furrowed in front. *General involucre* wanting, or of few segments, *partial* of numerous segments.

c. *Fruit not prickly, ridges acutely winged, not crenated.*

83. MYRR'HIS, [Page 410.] *Calyx* an obsolete margin. *Petals* obcordate, with an inflexed point. *Fruit* laterally compressed. *Carpels* with a deep furrow between them, of five equal acutely winged hollow *ridges*. *Channels* deep, without *vittæ*. *Albumen* closely invested with a second covering of the pericarp, the sides rolled inwards. *General involucre* wanting, *partial* of numerous segments.

84. PHYSOSPER'MUM, [Page 411.] *Calyx* margin of five teeth. *Petals* obcordate, with an inflexed point. *Fruit* laterally

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compressed. *Carpels* roundish, with five equal *ridges*, of which the lateral ones are placed within the margin. *Channels* with single *vittæ*. *Albumen* with the sides rolled inwards. *General* and *partial involucre* of numerous segments.

85. SMYR'NIUM, [Page 413.] *Calyx* an obsolete margin. *Petals* lanceolate, or elliptical, entire, with a long inflexed point. *Fruit* laterally compressed, double. *Carpels* roundish, reniform, with three acute prominent *ridges* at the back, the two lateral ones nearly obliterated. *Channels* with numerous *vittæ*. *Albumen* with the sides rolled inwards. *Involucres* various.

d. *Fruit* not prickly, *ridges* crenated or waved.

87. CONI'UM, [Page 415.] *Calyx* an obsolete margin. *Petals* obcordate, with a very small inflexed point. *Fruit* laterally compressed, ovate. *Carpels* with five equal prominent waved or crenated *ridges*, the lateral ones forming the margin. *Channels* with numerous streaks, but no *vittæ*. *Albumen* with the sides rolled inwards. *General involucre* of few segments, *partial* of three on one side.

86. ECHINO'PHORA, [Page 414.] *Calyx* margin of five teeth. *Petals* obcordate, with an inflexed point, the outer ones larger and bifid. *Flowers* of the *ray* on long stalks *sterile*. in the centre a solitary *fertile* one. *Fruit* ovate, roundish, inclosed in a hollow receptacle, with a short protruded beak. *Carpels* with five depressed equal waved striated *ridges*. *Channels* with single *vittæ*, covered with an arachnoid membrane. *Albumen* with the sides rolled inwards. *Involucre* of numerous segments.

e. *Fruit* globose. *Albumen* concave in front.

88. CORIAN'DRUM, [Page 417.] *Calyx* margin of five teeth. *Petals* obcordate, with an inflexed point, the outer ones larger, bifid. *Fruit* globose. *Carpels* with five primary depressed waved *ridges*, the lateral ones before an accessory margin, the four secondary ones more prominent and carinated. *Channels* without *vittæ*, the commissure with two *vittæ*. *Albumen* hollow in front, covered with a loose membrane. *General involucre* wanting, *partial* on one side.

*** *Perianth* double, inferior. *Corolla* of five petals.

(See *Staphylea* in ORD. III.)

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***** *Perianth single.*

89. CHENOPO'DIUM, [Page 418.] *Perianth* single, inferior, five-cleft, persistent, and unaltered, closing over the fruit. *Fruit* a thin depressed *utricle*, containing a single polished *seed*.
90. BE'TA, [Page 427.] *Perianth* single, half inferior, five-cleft, persistent. *Stamens* inserted into the fleshy top of the germen. *Fruit* kidney-shaped, inveloped in the capsular base of the calyx. *Seed* with a coriaceous covering. *Flowers* two or three, united at the base.
91. SAL'SOLA, [Page 428.] *Perianth* single, inferior, five partite persistent, the segments after flowering producing from their back a transverse appendage. *Stamens* inserted into the base of the perianth. *Fruit* a depressed membranous *utricle*. *Seed* solitary, with a membranous covering. *Embryo* spiral.
92. HERNARIA, [Page 430.] *Calyx* five-partite, slightly coloured within, persistent. *Stamens* five, alternating with five filiform entire *petals*, sometimes wanting. *Styles* very short, or wanting. *Stigmas* obtuse. *Capsule* membranous, indehescant, single seeded, covered by the calyx. *Small prostrate plants, leaves small, opposite, flowers in axillary clusters.*
93. UL'MUS, [Page 431.] *Perianth* bell-shaped, of four or five teeth, single, superior, persistent. *Stamens* mostly five, but varying from three to six. *Stigmas* sessile. *Capsule* membranous, compressed, winged all round, single seeded.

ORDER III. TRIGYNIA.—3 *Pistils.*

* *Flowers superior.*

94. VIBURNUM, [Page 438.] *Calyx* five-cleft, superior. *Corolla* bell-shaped, five-lobed. *Stigmas* sessile. *Fruit* a succulent berry, from one to three seeded.—*Upright deciduous shrubs, with cymose flowers and simple leaves.*
95. SAMBUCUS, [Page 440.] *Calyx* five-cleft, superior. *Corolla* wheel-shaped, of five at length reflexed lobes. *Stigmas* sessile. *Fruit* a succulent berry, three or four seeded.—*Upright deciduous shrubs, with cymose flowers and pinnated leaves.*

** *Flowers inferior.*

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96. STAPHY'LEA, [Page 443.] *Calyx* five parted, inferior, coloured, with an urceolate disk at the base. *Petals* five. *Styles* two or three, sometimes united. *Fruit* a membranous capsule, of two or three cells, dehiscing internally. *Seeds* roundish.—*Upright deciduous shrub, with large flowers in racemose panicles and pinnate leaves.*
97. TA'MARIX, [Page 444.] *Calyx* four or five parted, persistent, inferior. *Petals* four or five. *Stamens* four or five, or eight or ten. *Stigmas* three, long, spreading, glandular and oblique at the apex. *Capsule* tapering to a point, of one cell, three valved, and many seeded. *Seeds* crowned with long simple hairs.—*Shrubs or herbs with rod-like branches, small alternate scale-like leaves, and spiked or racemose flowers.*
98. CORRIGI'OLA, [Page 445.] *Calyx* five parted, persistent, inferior. *Petals* five, inserted into the base of the calyx, and as long. *Stigmas* three, sessile. *Capsule* covered by the calyx, single seeded. *Seed* suspended by its cord, which arises from the bottom of the capsule.—*Small procumbent herbs, with alternate glaucous leaves, and small flowers in terminal corymbose racemes.*
- (See *Chenopodium* in Ord. 2. *Stellaria* in Class 10.)

ORDER IV. TETRAGYNIA.—4 *Pistils*.

99. PARN'ASSIA, [Page 446.] *Calyx* five parted, spreading. *Petals* five, veiny, and opposite the base of each is an heart-shaped fleshy scale, fringed with slender bristles, tipped with globular glands. *Stigmas* four, sessile. *Capsule* superior, of one cell, opening at the apex with four valves, each with a linear placenta, bearing numerous seeds.—*Herbaceous plants, with entire radical leaves, a simple stem, with one leaf, and a solitary terminal flower.*

ORDER V. PENTAGYNIA —5 *Pistils*.

100. STA'TICE, [Page 447.] *Calyx* of one piece, funnel-shaped, plaited, dry, membranous, persistent. *Corolla* of five petals, united at the base, and bearing the stamens. *Stigma* five. *Capsule* enveloped in the calyx, with one seed.—*Herbaceous plants with radical leaves, flowers in heads or panicles, with an imbricated involucre of scarious scales*

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101. LI'NUM, [Page 452.] *Calyx* of five persistent pieces. *Corolla* of five petals. *Stamens* united at the base into a ring with intermediate teeth opposite the petals (abortive stamens). *Capsule* globose, pointed with the indurated base of the style, of ten valves, and ten cells. *Seeds* ovate, compressed.—*Herbaceous plants, with entire leaves, and very fugitive petals.*
102. SIBBAL'DIA, [Page 456.] *Calyx* of ten segments, the alternate ones small. *Corolla* of five petals, inserted into the calyx. *Fruit* five small nuts, placed upon a dry receptacle. (*Stamens and nuts vary from five to ten.*) *Small herbaceous plants, with compound leaves and yellow flowers.*

(See *Cerastrum* and *Spergula* in Class 10.)

ORDER VI. HEXAGYNIA.—6 *Pistils.*

103. DRO'SERA, [Page 457.] *Calyx* deeply five-cleft. *Corolla* of five petals. *Styles* three to five, divided in two. *Capsule* one celled, three valved. *Seeds* numerous.—*Herbaceous plants, clothed with beautiful glandular hairs flowers white.*

ORDER VII. POLYGYNIA.—*Many Pistils.*

104. MYOSU'RUS, [Page 459.] *Calyx* of five pieces, elongated at the base. *Corolla* of five petals, with filiform tubular claws. *Capsules* indehiscent, several, triquetrous, single seeded, inserted into a much elongated columnar receptacle, and terminated by the styles.—*Small herbaceous plants, with linear radical leaves, yellowish flowers, and a remarkably elongated receptacle.*

(See *Ranunculis Ficaria* in Class 13.)

FLORIGRAPHIA BRITANNICA.



1. *Salicornia herbacea.*



2. *Salicornia radicans.*



3. *Hippuris vulgaris.*



4. *Ligustrum vulgare.*



5. *Veronica spicata.*



6. *Veronica hybrida.*

FLORIGRAPHIA BRITANNICA.

CLASS I.

MONAN'DRIA.† 1 STAMEN.

ORDER I.

MONOGYN'IA. 1 PISTIL.

GENUS I. SALICOR'NIA. *Glasswort.*

Natural Order. CHENOPO'DEÆ.

GENERIC CHARACTER. *Perianth* single, swelling, fleshy, nearly equal. *Style* short. *Stigmas* two or three cleft. *Seed* one, inclosed in a thin transparent skin (*Utricle*) enveloped in the inflated *Perianth*. Named from *sal*, salt, and *cornu*, a horn.

1. *S. herba'cea*, (Fig. 1.) *jointed Glasswort*. Stem herbaceous, joints compressed, notched and thickened upwards, lower branches divided. Spikes tapering towards the extremity.

α. Stem erect. *S. an'nua*, English Botany, t. 415. *S. herbacea*, English Flora, vol. i. p. 2.

β. Stem procumbent. *S. procum'bens*, English Botany, t. 2475. English Flora, vol. i. p. 2.

Lindley, Synopsis of the British Flora, p. 214.—Hooker, British Flora, vol. i. p. 1.

Root small and annual. *Plant* six to twelve inches high, fleshy, jointed, branched and leafless, each joint surrounded by a short two-

† The student may be somewhat perplexed with the anomalous plants of this class. A flower with one *stamen* is the character of the class; but *Salicornia* is not unfrequently found to contain *two* stamens, and the lower flowers of *Hippuris* frequently without any. Other anomalous species, such as *Valeriana rubra*, (which has only one stamen,) *Valeriana dioica*, *Lychnis dioica*, &c., have the stamens and pistils in separate flowers; they are, however, arranged with other species in their respective classes, and a reference will be inserted under the class to which they might be thought to belong. *Zosteru* and *Callitriche* are removed to the class Monœcia, on account of the stamens and pistils generally being found separated; and the genus *Chara* is now placed in the class Cryptogamia.

lobed membraneous sheath. *Stem* woody within. *Flowers* in close spikes, lateral, and terminal in short joints, bearing at the base of the articulations two clusters of three flowers each. *Stigma* two or three cleft. *Stamen* one or two.

Habitat.—Frequent in salt marshes.

Annual; flowering in August and September.

2. *S. radi'cans*, (Fig. 2.) *creeping Glasswort*. *Stem* woody, procumbent and taking root, joints compressed and notched at the top, interstices cylindrical, spikes oblong, obtuse.

English Botany, t. 1691; and *S. fruticosa*, t. 2467.—English Flora, vol. i. p. 3.—Lindley, Synopsis, p. 214.—Hooker, British Flora, vol. i. p. 2.

Stem perennial and spreading. This varies but little from *S. herbacea*, except in its more spreading slender branches and *perennial* woody stem. The *S. fruticosa* of the English Botany, t. 2467, and the English Flora, p. 3, is only a variety or imperfect plant of the present species.

Habitat.—Muddy sea-shores; rare.

Perennial; flowering in August and September.

The various species of this genus of plants are found on the sea-coasts of most parts of the world, and are of great importance from the soda which they produce. In the south of France, and on the Mediterranean shores of Spain, they are made an object of extensive cultivation. Attempts have been made to cultivate them inland, but it was found that instead of producing soda, as when grown on the sea-coasts, they only contained potash: from which it appears that air impregnated with saline particles is necessary to the production of soda. When burned, their ashes form the *barilla* of commerce; dissolved in water, and crystallised, it obtains the name of *soda*; impregnated with *carbonic acid gas*, it forms the *carbonate of soda* of the shops; and from soda being used in the manufactory of soap and glass, the genus has derived the English name, *Glasswort*. Soda, called also *fossil* or *mineral alkali*, *natron* by the Germans and Swedes, and *nitrum* by the ancients, is now abundantly procured from common salt, which exists in vast quantities in the waters of the ocean. It was demonstrated by Sir H. Davy, in a series of experiments with the galvanic battery, by which he made some of the most brilliant discoveries in the science of Chemistry, that soda is composed of a metal, to which he gave the name of *sodium*, and oxygen gas of the atmosphere. *Salicornia* is frequently gathered by the country people, and sold for *Samphire* (*Crithmum maritimum*); and is said not to be inferior to it when pickled with vinegar.

GENUS II. HIPPU'RIS. *Mare's Tail.*

Nat. Ord. HALORAGÆÆ.

GEN. CHAR. *Perianth* single, crowning the germen with a very slight border. *Seed* one, inclosed in a small oval, hard, and shining pericarp (*nut*). Named from *hippos*, a mare, and *oura*, a tail. It was the opinion of the late Mr. Curtis, that the Hippuris of Linnæus was identical with a plant mentioned by Dioscorides under a different name, and arranged by his commentator Matthiolum with our *Polygonum aviculare* and *Herniaria*: "succeeding botanists," he says, "imagining from the growth of its leaves, or from its producing seed, that it had better pretensions to be ranked with the Equisetum, absurdly enough called it *Canda equina femina*, to which Mr. Hudson could not well avoid giving the English name of Mare's-tail."

1. *H. vulga'ris*, (Fig. 3.) *common Mare's Tail*. Leaves linear, six to ten in a whorl.

English Botany, t. 763.—English Flora, vol. i. p. 3.—Lindley, Synopsis, p. 110.—Hooker, British Flora, vol. i. p. 2.

Root jointed, the fibres whorled at each articulation. *Stem* undivided, erect, shining, with a tough woody column passing through its centre. *Leaves* about eight in a whorl, narrow, smooth, with a callous point, spreading, about an inch in length. *Flower* small, attached to the stem at the base of the upper leaves, never alternate; superior to the germen, and bearing within its slight border a *stamen* and tapering thread-like *style*: the former frequently absent in the lower part of the stem. *Filament* at first short, afterwards nearly the length of the style. *Anther* when young of two large reddish lobes, with the style passing between them. *Germen* oval, inferior. *Seed* single.

The short stems remaining under water are thickly set with longer and thinner leaves than those on the flowering stem, and generally ten in a whorl: the whorls frequently less than the eighth of an inch apart, forming dense brush-like tufts. Dr. Hooker finds this plant at Surlingham, Norfolk, two or three feet long, with the leaves excessively crowded, three and even four inches in length, pellucid, with an opaque nerve, their points not callous; the whole plant submerged, and consequently barren; and at Ben-y-gloe, in Scotland, at a considerable elevation above the sea, the opposite extreme of this, scarcely four inches high.

Habitat.—Ditches, lakes, and slow streams; frequent in England, in gravelly soil; not so common in Scotland.

Perennial; flowering June and July.

It possesses slightly astringent qualities, and is sometimes used by the country people as a tea in a relaxed state of the bowels, &c.; but its virtues are so slight as to render it unworthy attention.

CLASS II.

DIAN'DRIA. 2 STAMENS.

ORDER I.

MONOGYN'IA. 1 PISTIL.

GENUS I. LIGUS'TRUM. *Privet*.

Nat. Ord. OL'EACEÆ.

GEN. CHAR. *Perianth* double. *Calyx* inferior, of one leaf, with four bluntish projecting teeth. *Corolla* of one petal, regular, in four segments. *Berry* of two cells, with two seeds in each. Name from *ligo*, to bind; from its tough and pliant branches being used in making bands.

1. *L. vulgar'e*, (Fig. 4.) *common Privet*. Leaves elliptico-lanceolate, flowers in dense panicles.

English Botany, t. 764.—English Flora, vol. i. p. 13.—Lindley, Synopsis, p. 171.—Hooker, British Flora, vol. i. p. 4.

Shrub six or eight feet high, with terminal panicles of odoriferous white flowers. *Bark* smoothish, often sprinkled with numerous brown oval spots (*Lenticular glands*), which indicate the point from whence roots would appear, if placed in a favourable situation for their production. *Wood* tough and flexible. *Leaves* on short footstalks (*petioles*) varying from long and narrow to nearly round, opposite and alternate. *Calyx* and *pedicle* somewhat hairy, with short deciduous *bractea*. *Corolla* white, incurved at the edges, longer than the calyx, turning brown before falling. *Stamens* opposite, alternate with the segments of the corolla. *Style* short. *Berry* blackish-purple or yellow, round and pulpy.

Habitat.—Hedges and thickets in shady situations; common.

Perennial; flowering in July and August.

PRIVET.—Prim-privet is an ornamental and useful shrub. It is often planted with advantage in Beech (*Fagus Sylvatica*) and Hornbeam (*Carpinus Betulus*) hedges, in a stiff clay soil; in such situations it sometimes attains the height of sixteen feet. In moist ground, when partially shaded, its long flexible branches form an impenetrable undergrowth, well adapted for covers in game preserves, &c. The berries are harmless, and are fed on by pheasants, partridges, and other birds. It is remarkably patient of the shears, and is sometimes cut into singularly fantastic forms; and is one of the few plants that will grow under the shade and drip of trees, and confined smoky situations, for which reason it is common even in the close parts of large

towns. The caterpillars of the Privet Hawkmoth, (*Sphinx ligustris*,) may frequently be found feeding upon the leaves of this plant; and specimens of the moth are best obtained by feeding the caterpillars in a cage made for the purpose, or in common garden-pots covered with glass, until they change into the chrysalis state; they may then be removed into a dry cool place until the following spring; during the months of April or May, they should be exposed to the influence of the sun, and in a short time the perfect moth will make its appearance.

GENUS II. VERON'ICA. *Speedwell.*

Nat. Ord. SCROPHULARIN'EÆ.

GEN. CHAR. *Perianth* double. *Calyx* of one piece, inferior, persistent, divided into four deep segments. *Corolla* wheel-shaped (*rotate*), deeply four cleft, the lower segment smallest. *Capsule* two-celled. The derivation of the name of this beautiful genus has much puzzled botanists: Sir J. E. Smith says, "Its common etymology is of a mule kind between Greek and Latin, from *verus*, or rather *vera*, true, and *εἶκος*, a figure; and this, illiterate and barbarous as it is, has the sanction of the superstitious legend of St. Veronica, whose handkerchief is recorded to have received the impression of our Saviour's face, as he used it in bearing his cross to the place of crucifixion. But we find nothing analogous in any of the herbs which have borne this name, nor any character, true or false, stamped upon them, except that of their own peculiar beauty." There exists to this day a difference of opinion as to the pronunciation of the name; and it was to the settling of this question that the controversial inquiry was mainly directed. "If," adds the learned authority above quoted, "there be any truth in its Greek origin, the *i* must be long; but if otherwise, the analogy of *Betonica* may justify the usual practice of throwing the accent on the *o*."

* *Spikes or racemes terminal. (Root perennial.)*

1. *V. spica'ta*, (Fig. 5.) *spiked Speedwell*. Spike terminal, stem erect, undivided, branching at the base, leaves opposite, oblong, tapering at the base, serrated, downy, lower or radical ones broader, ovate and stalked.

English Botany, t. 2.—English Flora, vol. i. p. 17.—Lindley, Synopsis, p. 188.—Hooker, British Flora, vol. i. p. 5.

Stem four to ten inches high, erect, downy. *Lower Leaves* opposite, broader, serrated or crenated in the middle, entire towards the extremities, upper ones long and narrow, serrated or entire, sometimes alternate. *Spike* terminal. *Flowers* numerous dark blue. *Bracteas* linear. *Calyx* remarkably downy twice as long as broad. *Capsule* in the immature state downy.

Habitat.—Chalky ground about Bury St. Edmund's and Newmarket Heath. Rare.

Perennial ; flowering July and August.

V. hyb'rida, (Fig. 6.†) *Welsh Speedwell*, of Engl. Botany, t. 673, and Engl. Flora, vol. i. p. 17, is now thought to be only a variety of the above ; indeed, Dr. Hooker deems it scarce worthy of being commemorated as a variety, and to differ only in its more luxuriant growth. The whole plant is larger, with broader, more oval and distinctly veined *Leaves*, stalked, often three in a whorl, unequally serrated, the lowermost ovate and broader. *Stem* erect and generally bearing three spikes. The whole plant is stouter, rougher, and much larger.

Habitat.—Humphrey Head, near Cartmel Wells, Lancashire.—Ormeshead, and Gloddath, near Conway ; Craig Wreiddim, in Montgomeryshire. Rare.

2. *V. serpyll'lifolia*, (Fig. 7.) *thyme-leaved Speedwell*. Raceme somewhat spiked, leaves ovate, obtuse, slightly crenate, three ribbed, smooth, capsules inversely reniform, about as long as the style.

English Botany, t. 1075.—English Flora, vol. i. p. 20.—Lindley, Synopsis, p. 188.—Hooker, British Flora, vol. i. p. 5.

β. *V. alpi'na* ; stems prostrate. *V. humifu'sa*, Dicks. Linn. Tr. vol. ii. p. 288.

Root fibrous. *Stem* ascending, branching from the base. *Leaves* opposite, frequently entire, lower ones on footstalks, upper ones nearly sessile. *Calyx* segments, obovate, equal, blunt. *Corolla* light blue or flesh-coloured, with dark blue veins. *Capsule* in the immature state inversely heart-shaped (*obcordate*), when ripe inversely kidney-shaped (*reniform*). The whole plant is more or less downy, depending upon the situation in which it has grown : if in a wet place, it is smooth and shining ; in a dry one, it is clothed more or less with pubescence.

Habitat.—Gardens, pastures, &c. Common. β. On the high mountains of Scotland ; on Snowden ; Cheviot Hills, Northumberland. Perennial ; flowering from May to July.

3. *V. fruticulo'sa*, (Fig. 8.) *shrubby Speedwell*. Raceme somewhat spiked, many flowered, leaves ovate-lanceolate, thick, slightly serrated, stem ascending, woody and branching at the base, capsule ovate, slightly notched at the extremity.

English Botany, t. 1028.—English Flora, vol. i. p. 18.—Lindley, Synopsis, p. 188.—Hooker, British Flora, vol. i. p. 6.

Root strong and woody. *Stem* erect, round, woody towards the root. *Leaves* opposite on short footstalks, pale green, leathery, frequently en-

† It is intended to give figures, as in the present instance, of some of the more marked varieties of the different species of plants, which will be of considerable assistance to the young student in Botany.



7. *Veronica serpyllifolia.*



8. *Veronica fruticulosa.*



9. *Veronica alpina.*



10. *Veronica saxatilis.*



11. *Veronica Anagallis.*



12. *Veronica Beccabunga.*

ture at the extremities and serrated in the middle. *Racemes* long, flower-stalks (*pedicles*) longer than the bractea. *Calyx* segments, obovate, longer than the capsule. *Corolla* flesh-coloured and veined. *Capsule* ovate. *Style* longer than the capsule, its stigma capitate. *Seed* smooth and flat.

This species was long confounded with *V. saxatilis*, but appears to be quite distinct, and one of the rarest of our native plants. We have been unable to obtain other than cultivated specimens. It has only been found in Scotland, by Dr. Walker upon Ben Cruachan, and Mr. Brown upon Ben Lawers. Sir James Smith, in speaking of it, remarks, "Mr. Brown, whose accuracy is beyond all doubt or 'supposition,' told me he found this plant on Ben Lawers. I trust no further confirmation is requisite to establish it as a native." E. Bot.

In luxuriant cultivated specimens, the racemes or clusters are frequently lateral, the leaves broader at the base and clasping the stem, and the whole plant downy.

Perennial; flowering in July.

4. *V. alpina*, (Fig. 9.) *alpine Speedwell*. Raceme corymbose, leaves ovate, slightly serrated, smoothish, calyx and bractea fringed with jointed hairs, capsule obovate, notched at the extremity, style short.

English Botany, t. 484.—English Flora, vol. i. p. 19.—Lindley, Synopsis, p. 188.—Hooker, British Flora, vol. i. p. 5.

Stem erect undivided from four to six inches high, branching at the base. *Leaves* various in size, larger and more deeply serrated than those of *V. serpyllifolia*. *Flowers* deep blue, at first in a short compact corymb, afterwards elongated with the lower flower-stalks longer than the upper. *Calyx* in four unequal segments and as well as the bractea hairy. *Capsule* obovate. *Style* very short. *Stigma* capitate. The whole plant scattered with white jointed hairs.

Habitat.—Found only on the summit of the Highland mountains of Scotland, on the margin of rivulets and trickling rills; but rare.

Perennial; flowering in July and August.

5. *V. saxatilis*, (Fig. 10.) *blue rock Speedwell*. Raceme of few flowers, corymbose, leaves oval, slightly serrated, stems spreading, capsules ovate, of four bifid valves.

English Botany, t. 1027.—English Flora, vol. i. p. 19.—Lindley, Synopsis, p. 188.—Hooker, British Flora, vol. i. p. 5.

Root perennial long and fibrous. *Stems* woody, slender, procumbent at the base and much branched. *Leaves* smooth, veiny, serrated or entire, more or less stalked, turning black when dry. *Flowers* large, bright blue, richer in the brilliancy of its colour than any other of the genera.

Habitat.—On exposed rocks in Scotland; rare. Our specimens were collected on Ben Lawers; it is also found on other mountains of the Breadalbane range.

Perennial; flowering in July.

Deservedly esteemed as an ornament to the flower-garden; and patches of its rich blue flowers, contrasted with the bright green leaves, are highly decorative to artificial rockery, &c.

**** *Racemes axillary.* . (*Root perennial.*)**

6. *V. Anagal'lis*, (Fig. 11.) *Water Speedwell*. Racemes arising from the base of the upper leaves (*axillary*), leaves opposite, lanceolate, serrated, stem erect.

English Botany, t. 781.—English Flora, vol. i. p. 21.—Lindley, Synopsis, p. 188.—Hooker, British Flora, vol. i. p. 6.

Root fibrous. *Stem* erect, succulent, smooth, from six inches to two feet high. *Leaves* tapering towards the end, without footstalks, various in width. *Racemes* lateral, slender, many flowered. *Flower-stalks* erect. *Calyx* of four equal ovate lanceolate segments, with three veins arising from the base of each, the centre one largest. *Flowers* light blue or flesh-coloured. *Capsule* nearly round, slightly notched, valves closely reticulated. *Seed* small and numerous. *Style* half the length of the capsule. The whole plant varying extremely in size, depending upon the situation in which it has grown: in the fens about Lincoln it grows two feet high, the lower part of the stem and axils of the leaves thickly clothed with close down. Racemes branched, and, as well as the pedicles, scattered with short pubescence.

Habitat.—Ditches and muddy places; not uncommon. Less frequent in Scotland than in England.

Perennial; flowering in July and August.

7. *V. Beccabun'ga*, (Fig. 12.) *Brooklime*. Racemes arising from the base of the opposite leaves, leaves oval, blunt, slightly serrated, smooth, stem procumbent taking root at the joints.

English Botany, t. 655.—English Flora, vol. i. p. 20.—Lindley, Synopsis, p. 188.—Hooker, British Flora, vol. i. p. 6.

Stem creeping freely, taking root at the joints, when grown in water, whole plant very succulent, and bent in various forms. *Leaves* opposite with short footstalks, oval, serrated and spreading. *Racemes* long of numerous bright blue flowers. *Flower-stalks* erect. *Calyx* of four ovate acute equal segments, with three or five veins. *Capsule* roundish, tumid, scarcely reticulated. *Seed* small and numerous. *Style* about the length of the capsule.

Habitat.—Rivulets and ditches; very common.

Perennial; in flower during the summer months.

Brooklime was formerly greatly esteemed in the cure of numerous diseases, particularly those of the skin, and had great reputation in the healing of wounds and ulcers, but it is now entirely neglected; if any benefit is to be obtained from its use, it must be taken in large quantities, and as a common article of food; it is frequently gathered and eaten with water cresses (*Nasturtium officinale*).

Beccabunga is derived from the German *Bach-pungen*, *bach* meaning a rivulet; in Yorkshire and Norfolk a *beck*. (*Smith.*)



13.

Veronica scutellata.



14.

Veronica hirsuta.



15.

Veronica officinalis.



16.

Veronica officinalis, Var.



17.

Veronica chamædrys.



18.

Veronica montana.

8. *V. scutella'ra*, (Fig. 13.) *Narrow-leaved Marsh Speedwell*. Racemes lateral, alternate, pedicles spreading, in fruit deflexed; leaves linear, slightly toothed.

English Botany, t. 782.—English Flora, vol. i. p. 21.—Lindley, Synopsis, p. 188.—Hooker, British Flora, vol. i. p. 6.

Stem six to twelve inches long, weak, nearly erect. *Leaves* toothed or entire. *Racemes* long, generally simple, sometimes divided, and the divisions, as well as the flower-stalks, spreading. *Calyx* ovato-lanceolate, half the length of the capsule. *Corolla* flesh-coloured, with dark blue veins. *Capsule* of two flat orbicular membranous lobes. *Style* nearly as long as the capsule. *Stigma* capitate. Whole plant generally smooth, but sometimes it is found covered with more or less pubescence, depending, like *V. serpyllifolia*, upon the situation in which it has grown; the racemes also vary considerably in their length, which likewise depends upon the place of its growth.

Habitat.—In marshy and boggy wet places not uncommon.

Perennial; flowering in July and August.

On a common near Esher, Surrey, we have gathered specimens of this plant remarkably slender, with racemes nearly twice the usual length, but differing in no other respect from the common appearance of the plant.

9. *V. hirsu'ta*, (Fig. 14.) *small hairy Speedwell*. Racemes lateral, slender, leaves ovato-lanceolate, somewhat serrated, scattered with hairs, stem procumbent, hairy, capsule obcordate, undivided.

Hopkirk, Flora Glottiana, p. 9.—English Flora, vol. i. p. 22.—Hooker, in English Botany Supplement, t. 2673.

V. setigera, D. Don's Description of Rare Plants of Scotland, p. 4. —Lindley, Synopsis, p. 180.—Hooker, British Flora, vol. i. p. 7.

Stem procumbent, branching at the base, slender. *Leaves* narrow, acute, tapering into a footstalk. *Racemes* slender, the lower flowers distant, the upper more compact. *Flower-stalks* shorter than the bracteas. *Corolla* pale blue. *Anthers* purple. *Stigma* capitate. *Capsule* frequently abortive. A very small species, having the appearance of a starved specimen of *V. officinalis*, and doubts are entertained as to its being any other. The abrupt undivided capsule, which Sir J. Smith considers as its most marked distinguishing character, we not unfrequently find in *V. officinalis*, but it retains its diminished size and the above characters after long cultivation.

Habitat.—In dry heathy places in Carrick, Ayrshire—Mr. James Smith.

Perennial; flowering in June.

10. *V. officina'lis*, (Fig. 15.) *common Speedwell*. Racemes lateral, leaves opposite, ovate, serrated, petiolated, downy, stem procumbent, very downy.

English Botany, t. 765.—English Flora, vol. i. p. 22.—Lindley, Synopsis, p. 188.—Hooker, British Flora, p. 6.

β. Nearly smooth, English Flora, vol. i. p. 22. *V. Allionii*, D. Don, MSS. Hooker's Flora Scotiæ, vol. i. p. 7.

Stem three to twelve inches long, creeping, taking root from the axils of the leaves, branched at the base. *Leaves* obtuse or pointed, more or less serrated, petioles short. *Racemes* long, flower-stalks erect, shorter than their bractæas. *Corolla* light blue, with dark veins. *Capsule* obcordate, deeply notched, or entire. *Style* longer than the capsule, its stigma capitate. *Seed* pale, smooth. Whole plant more or less rough, with spreading hairs, which are apparently jointed, and are a beautiful example, when examined with a microscope, of the delicate transparent cellular structure of hairs. An exceedingly variable plant, sometimes very small, and thickly covered with close hair, leaves ovate, lanceolate, or rotundate, nearly entire or deeply serrated; at other times it is long and spreading, leaves broadly ovate, tapering into a footstalk, approaching spatulate, and much less downy.

The *V. officinalis* is sometimes found with flesh-coloured flowers; several plants of this description we have seen on the moors about five miles west of Sheffield, growing contiguous to and forming a pleasing contrast to the usual appearance of this species, from which, however, it differs in no material point, except in the colour of the flower, an occurrence by no means rare to plants even in a state of nature; it is nevertheless one of the most singularly interesting changes of which plants are susceptible, and probably one of those over which human ingenuity possesses comparatively no control. Instances may indeed be mentioned—*Hydrangea hortensis* for example—when plants, by peculiar treatment, are sometimes made to change the colour of their flowers from white to blue; but even this transitory result cannot always be effected with certainty. Seedling plants of Pinks, Carnations, Picotees, &c., but more especially Tulips, often defeat for years the diligent attention of the most skilful florist, until some cause, which by mere cultivation he can neither hasten nor retard, interposes, and causes his flowers to *break*, as it is technically termed, from the dingy self colour into perhaps a brilliant scarlet, purple, or yellow. Those floral changes of colour which affect plants in a state of nature, are mostly from blue to white, from red to blue, and from red to white—seldom from white to red or blue; whence it will appear that these changes tend to a loss rather than an accession of colour.

Habitat.—Woods, banks, heaths, and pastures; common. β. On mountains in Scotland and Ireland.

Perennial; flowering from May to August.

The student in Botany may find the varieties of this species somewhat perplexing, but with attention to the above characters, mistakes as to the identity of the species will not arise. We have frequently had specimens sent by individuals, with a doubt as to whether the ra-

cemes were axillary or terminal, as seen in Fig. 16. The longer petioles, the nearly entire leaves, and the whole plant smaller, have led them to indulge in the belief of its being a distinct species; but the removal of the plants to better soil and a more favourable situation for their growth, has proved them to be only varieties, by assuming the more ordinary appearance of the plant; and, it will be observed, the small leaves between the racemes embrace the terminal bud which would have elongated and continued the stem.

This plant was formerly recommended medicinally, in the form of tea, as a pectoral against coughs and asthmatic affections. It entered into the materia of pharmacopæias under the names of *Veronica mas*; *Thea germanica*; *Betonica pauli*; and *Chamædrys spuria*. We have known cases of individuals labouring under affections of the chest, for the cure of which the greatest faith has been placed in the supposed virtues of this plant; the parties taking a strong infusion of it for a length of time, without experiencing the least benefit, or, happily, much injury, from the drink. Its efficacy, if any, is so slight as to be unworthy of attention, and is now justly forgotten. It is astringent and bitter, and has been used extensively in Sweden and Germany as a substitute for China tea; but its bitter, disagreeable, sickly flavour, readily distinguishes its infusion from that of the real tea.

11. *V. chamædrys*, (Fig. 17.) *Germander Speedwell*—*Wild Germander*. Racemes lateral, elongated, many flowered, leaves ovate, rugose, deeply serrated, sessile or on short footstalks, stem with two opposite longitudinal hairy lines, capsule inversely heart-shaped, shorter than the calyx.

English Botany, t. 623.—English Flora, vol. i. p. 23.—Lindley, Synopsis, p. 189.—Hooker, British Flora, vol. i. p. 7.

Stem undivided, round, rooting at the base, ascending, marked with a hairy line on each side, changing their position at each pair of leaves. *Leaves* deeply and unequally serrated, opposite, sessile or on short footstalks, with numerous veins sunk on the upper side, prominent and hairy beneath. *Racemes* lateral, sometimes opposite, long, slender, many flowered, and gracefully curved in the upper part. *Flower-stalks* also slender, more or less bent, about half an inch long, with lanceolate bractea. *Calyx* segments, lanceolate, acute, and hairy, shorter and much smaller than the corolla, the large petals of which are of a beautiful blue, streaked with darker veins, sometimes purple, lilac, or whitish, downy at the base. Whole plant more or less hairy, and of a darker green than *V. montana*, which it most resembles, though essentially distinct, especially in the shorter leaf-stalks, the racemes longer and more abundantly flowered, the corolla larger, and the capsule much smaller.

Habitat.—In groves, pastures, and hedges common.

Perennial; flowering May and June.

When planted in rich soil, in a cool, shady situation, this beautiful little plant becomes a highly ornamental border flower, continuing to grow and produce blossoms long beyond its usual period of flowering; but in such situations it seldom survives more than one season: it therefore becomes an annual, and is frequently cultivated as such, excelling, in the brilliancy and profusion of its flowers, many of the rarer exotic species. It is a great favourite, not only from the beauty of its flowers, but as an early harbinger of Spring; and few plants present a more pleasing appearance to the admirer of Nature, than its soft blue but transient flowers gaily decking its native banks, or gracefully drooping in the shady grove. It is frequently mistaken for the emblem of friendship, the Forget-Me-Not (*Myosotis palustris*), but a very slight botanical knowledge will correct a mistake in plants so different from each other. The petals close, and envelope the stamens and pistil, in cloudy or rainy weather, which was called by Linnæus the sleep of plants, and is a singular property observed in many other flowers, which expand only beneath the rays of the sun, and close when they are withdrawn. Others closely fold their petals during the day, and expand them at night, when they also become particularly fragrant. A striking illustration of this property is found in *Erinus Lychnidea*, a small but very beautiful half-shrubby plant, and one of the many splendid ornaments to the conservatories and greenhouses of this country, which from time to time have been introduced from the Cape of Good Hope: the pure white star-like flowers of this plant continue closely shut during sunshine, but in cloudy weather and twilight they become fully expanded. One of the most remarkable instances of nocturnal flowering plants is the Night-blowing Cereus, or *Cactus grandiflora*, the flowers of which begin to open between eight and ten o'clock at night, and continue in bloom until about four the following morning, when they begin to close, hang down, and soon decay. These, and many similar phenomena, will be familiar to the observer of nature, the explanation of which, in several instances, has been long sought, but not satisfactorily accounted for. It is probable that light is a powerful agent in producing the change, for M. De Candolle has found that in many cases the petals would expand when removed from a dark situation to one in which there was light produced by candles.

Withering observes, that an infusion of the leaves of this plant forms a more preferable drink than those of *V. officinalis*, and perhaps equally efficacious.

12. *V. monta'na*, (Fig. 18.) *Mountain Germander Speedwell*. Racemes lateral, short, few flowered, leaves cordato-ovate, petiolated, serrated, stem spreading, hairy all round, calyx smaller than the two-lobed orbicular capsule.

English Botany, t. 766.—English Flora, vol. i. p. 23.—Lindley, Synopsis, p. 189.—Hooker, British Flora, vol. i. p. 7.

Root fibrous. *Stem* six to eighteen inches long, equally hairy all

round, ascending, weak. *Leaves* opposite, large, hairy, glossy, sometimes pointed at the extremity, equally serrated, with the footstalks about their own length. *Racemes* lax, of few flowers. *Calyx* slightly hairy, its segments united in pairs on opposite sides of the large, compressed, membranaceous, and veiny *capsule*, the thin edges of which are fringed with fine jointed white hairs. *Corolla* light blue, streaked with purple or reddish veins, lower segment lighter coloured, small and narrow.

Habitat.—Woods and moist situations; not very common.

Perennial; flowering in May and June.

How this species, so distinct in its characters, should ever have been mistaken for *V. chamædrys*, is somewhat remarkable; its general appearance, as well as specific characters, are so obviously different.

*** *Flowers axillary, solitary. (Root annual.)*

13. *V. agrestis*, (Fig. 19.) *green procumbent Field Speedwell—Germander Chickweed*. Stem procumbent, leaves opposite, petiolated, cordato-ovate, deeply serrated, as long as the flower-stalks, segments of the calyx oblong obtuse, capsule of two tumid keeled lobes, each cell containing about six seeds.

Borrer, in English Botany Supplement, t. 2603.—English Flora, vol. i. p. 24.—Lindley, Synopsis, p. 189.—Hooker, British Flora, vol. i. p. 7.

Stem from three to twelve inches long, branching at the base. *Leaves* ovate, deeply serrated, generally opposite, and on the lateral branches frequently shorter than the flower-stalks. *Calyx* segments, oblong, obtuse, longer than the *capsule*, dilating and becoming veiny as the fruit advances to maturity. *Flowers* small, bright blue. *Seed* large, oval, wrinkled, and cupped. Whole plant scattered with hairs, varying considerably in size, and in the length of its flower-stalks. We have specimens from Crab Marsh, Wisbech, nearly smooth, the leaves broad, their stalks dilated and channelled above, the two lower segments of the calyx much larger than the upper, and serrated.

Habitat.—In waste and cultivated places common.

Annual; flowering during the summer months.

14. *V. polita*, (Fig. 20.) *grey procumbent Field Speedwell*. Stem procumbent, leaves petiolated, cordato-ovate, deeply serrated, shorter than the flower-stalks, segments of the calyx ovate, acute, capsule of two tumid lobes, cells containing many seeds.

Veronica agrestis, English Botany, t. 783.—*V. polita* of Fries in English Botany Supplement, t. 2603.—Hooker, British Flora, vol. i. p. 8.

Root small. *Stem* from three to twelve inches long, branching at the base. *Leaves* on the lower part of the stem opposite, above alternate,

inclining to heart-shape, more or less deeply serrated, shorter than the axillary flower-stalks. *Calyx* segments ovate, acute, dilating and becoming veiny in maturity, longer than the *capsule*, which is formed of two tumid round lobes, not keeled, and each cell many-seeded. *Corolla* small, bright blue. The whole plant more or less hairy, and of a greyish-green colour. This varies but little from *V. agrestis*, and no doubt is frequently passed over as the same. The most permanent distinguishing characters are to be sought for in the *calyx* segments and tumid, not keeled capsule; the length of the flower-stalks we find to vary in both species, mainly depending upon the situations in which they have grown: the seeds too are more numerous than in the preceding.

Habitat.—In waste and cultivated ground frequently growing with *V. agrestis*.

Annual; flowering during the summer.

15. *V. hederifo'lia*, (Fig. 21.) *Ivy-leaved Speedwell*—small *Henbit*.

Stem procumbent, leaves cordate, from five to seven, lobed, petiolated, *calyx* segments cordate and ciliated, capsule of two turgid lobes, its cells two-seeded.

English Botany, t. 784.—English Flora, vol. i. p. 25.—Lindley, Synopsis, p. 189.—Hooker, British Flora, vol. i. p. 7.

Root long, fibrous. *Stem* from six to eighteen inches long, procumbent, branching freely at the base, thinly scattered with slender hairs, sometimes in two opposite lines. *Leaves* somewhat fleshy, slightly hairy, more or less deeply divided into teeth or lobes, the terminal one the largest, upper ones alone nearly sessile, opposite or alternate, their petioles channelled above. *Corolla* small, sometimes shorter than the *calyx*, light blue, or whitish, with dark veins. *Flower-stalks* as long, or longer than the leaves, reflexed in fruit. The outer segments of the *calyx* frequently smallest. *Capsule* smooth. *Seed* large, mostly four, oval, cupped, and wrinkled.

Habitat.—In fields, hedge-banks, and cultivated ground frequent.

Annual; flowering during the summer months.

Varieties with deeply divided leaves are sometimes mistaken for the more rare species, *V. triphyllos*, but the tumid capsules at once distinguish them.

16. *V. triphyl'los*, (Fig. 22.) *trifid Speedwell*—blunt-fingered *Speedwell*. Stem erect, with spreading branches, upper leaves sessile, deeply cut in obtuse segments, lower ones petiolated, flower-stalks longer than the bracteas or the *calyx*.

English Botany, t. 26.—English Flora, vol. i. p. 25.—Lindley, Synopsis, p. 189.—Hooker, British Flora, vol. i. p. 9.

Stem from three to five inches high, the branches mostly arising from the lower part. The upper leaves alternate, of from three to five deep



19. *Veronica agrestis.*



20. *Veronica polita.*



21. *Veronica hederifolia.*



22. *Veronica triphylla.*



23. *Veronica verna.*



24. *Veronica arvensis.*

finger-like segments, the lower opposite, entire, or palmate. *Corolla* a dark rich blue, the lower flowers sometimes on long footstalks. *Capsule* inversely heart-shaped, and hairy. *Style* short. *Seed* numerous, flat. The whole plant downy. It is distinguished from all the varieties of *V. hederifolia* by the flat, not tumid capsules, and each cell containing numerous flat seeds.

Habitat.—In sandy fields, but rare; chiefly on the confines of Norfolk and Suffolk, and said to have been found in Yorkshire, by Mr. Tofield. In the neighbourhood of Alcaster “not rare.”—*Purton's Midland Flora*.

Annual; flowering in April.

17. *V. ver'na*, (Fig. 23.) *vernal Speedwell*. Stem erect, branching from the base, leaves pinnatifid, the upper ones or bracteas lanceolate, undivided, flower-stalks shorter than the calyx and bracteas.

English Botany, t. 25.—English Flora, vol. i. p. 26.—Lindley, Synopsis, p. 189.—Hooker, British Flora, vol. i. p. 9.

A small erect plant, not more than one or two inches high, having the habit of *V. arvensis*, more or less branched at the base, which, as well as the stem, are erect. A number of specimens of this rare little plant are in the collection of the late Mr. Salt, which is now deposited in the Sheffield Literary and Philosophical Society's Museum, and from which our drawing was taken; they appear to have been collected in the neighbourhood of Bury. All the specimens are branched at the base, some in a close tuft of many branches, and clothed with short thick hair. The *leaves* are divided mostly in three lobes, the central one the largest, the upper ones lanceolate entire. *Corolla* small. *Capsule* inversely heart-shaped, broad, compressed, downy, ciliated, with a blunt margin.

Habitat.—About Bury and Thetford, Suffolk; rare; first discovered by Sir John Cullum, Bart.

Annual; flowering in April.

18. *V. arven'sis*, (Fig. 24.) *Wall Speedwell*. Stem nearly erect, leaves ovate, deeply serrated, upper or bracteas sessile, lanceolate, flowers nearly sessile, shorter than the bracteas.

English Botany, t. 734.—English Flora, vol. i. p. 24.—Lindley, Synopsis, p. 189.—Hooker, British Flora, vol. i. p. 8.

Stem erect or ascending, hairy, from two to twelve inches high, mostly branched at the base, the central stem generally the longest and most erect. The subspicate flowers are at first short and dense, in maturity long and slender. *Leaves* hairy, the lowest opposite on short footstalks, the upper sessile and cordate, the floral ones or bracteas sessile, lanceolate, serrated or entire, becoming alternate, longer than the flowers. *Calyx* segments lanceolate, the two outer ones frequently longer than the inner. *Corolla* small, light blue, or whitish, about the

length of the calyx. *Capsule* inversely heart-shaped, compressed, and ciliated. *Seed* numerous, oval, with a dark sunk spot on one side, convex on the other.

Habitat.—In cultivated ground, banks, walls, &c. common.

Annual; flowering May to July.

This is one of our most variable plants, especially in size: if grown in cultivated ground favourable to its growth, it is frequently found more than a foot in length, much branched at the base, and spreading its branches around it; the leaves of such plants are generally more deeply serrated, and on longer footstalks, with the veins spread out into the leaf from its base. But if grown upon walls, or in situations where the supply of nourishment is scanty, the plant is frequently very small, not exceeding an inch or an inch-and-half in length, erect, without branches, and the whole leaves sessile, oval, (as seen in Fig. 25.) strongly veined, and thickly clothed with pubescence. Although varying so greatly in size, its specific characters are constant; and the student will find but little difficulty in correctly referring any of its varieties to its proper station.

The hairiness of plants we have several times mentioned as being greater or less according to the situation and soil in which they have grown,—a circumstance beautifully illustrative of the means which Nature adopts for the preservation and support of vegetables under the various circumstances in which they are placed. Hairs are composed of transparent cellular tissue, and formed either of a single elongated cell, or of several arranged in a row; they are either pointed, or divided at the extremity into branches in an elegant stellated manner; or they are branched along their whole length, presenting a toothed or plumose appearance. There are many other modifications of hairs, varying extremely in length, rigidity, &c. They are distinguished by appropriate names, and arranged under two principal divisions, viz. *Lymphatic* and *Secreting*: the former appear to be for the purpose of protecting the younger parts of the plant from cold, and for regulating the process of evaporation from the surface on which they are placed, and where they become points for the attraction of moisture from the surrounding medium. We have already mentioned several instances illustrative of this part of their economy; it may be added, that plants growing in a situation where a plentiful supply of moisture is afforded, are generally found thinly scattered with, or without hairs; while other plants of the same species, grown in a hot, exposed situation, with a scanty supply of moisture, and where it is necessary they should be furnished with every means of compensating the disadvantage, are clothed with a greater or less abundance of hairs. On the approach of evening, when the atmosphere deposits its dews, the capillary organs stand erect, and spread themselves out for the purpose of attracting the moisture which they, or the *stomata* (mouth, or opening in the leaf), absorb and carry into the system of the plant; but when the heat of



25.

Veronica arvensis, Var.



26.

Veronica Buxbaumii.



27.

Pinguicula grandiflora.



28.

Pinguicula vulgaris.



29

Pinguicula alpina.



30

Pinguicula Lusitanica.

the sun is again experienced, the hairs fall down and form a layer of minute cavities above the surface, by which means evaporation is prevented from taking place so rapidly as it otherwise would do. The secretory hairs are those which have, either at the apex or base, distended cellules as the receptacles of secretions; such are the glands on the extremity of hairs of many of the roses, and the sac at the base of the sting of the nettle, &c.

19. *V. Buxbau'mii*, (Fig. 26.) *Buxbaum's Speedwell*. Stem procumbent, leaves petiolated cordato-ovate deeply serrated shorter than the flower-stalks, segments of the calyx ovato-lanceolate acute, capsule obcordate, of two tumid spreading lobes, which are keeled and compressed in the upper part, cells mostly eight-seeded.

Borrer in English Botany Supplement, t. 2769.—*V. Persica*, Stev.—*V. filiformis*, Johnson's Flora of Berwick-upon-Tweed, p. 225.—Hooker, British Flora, ed. 1, p. 6.—*V. agrestis*, β . Hook. Br. Fl. ed. 2, p. 8.—Hook. Br. Fl. ed. 3, p. 8.

Stem from ten to eighteen inches long, procumbent, branching at the base, the branches taking root. *Leaves* mostly alternate, inclining to heart-shape, deeply serrated or inciso-serrated, shorter than the axillary flower-stalks. *Calyx* segments lanceolate acute, longer than the divaricated lobes of the capsule, which are keeled and compressed upwards. *Corolla* large, bluish purple with dark veins. The whole plant larger, stouter, and more hairy than *V. agrestis* and *V. polita*, for which it might be mistaken.

Habitat.—In fields and cultivated ground; but a doubtful native. It has been found at Whiterig, Berwickshire—(Dr. Johnson),—near Newcastle, Margate, in Oxfordshire, and near Glasgow, Scotland.

Annual; flowering during the summer months.

GENUS III. PINGUIC'ULA. *Butterwort*.

Nat. Ord. LENTIBUL'RIÆ.

GEN. CHAR. *Calyx* permanent, two lipped, upper three cleft, the lower bifid. *Corolla* ringent, spurred, and five cleft. *Germen* globose. *Style* very short. *Stigma* of two unequal lobes. *Capsule* one-celled. *Seeds* numerous, and attached to a central receptacle. Named from *pinguis*, fat; so called because the leaves are greasy to the touch.

1. *P. grandiflo'ra*, (Fig. 27.) *large-flowered Butterwort*. Spur cylindrical, tapering, acute, the length of the veined limb of the corolla, the lower segment of which is large, spreading and notched, calyx obtuse, capsule ovate.

English Botany, t. 2184.—English Flora, vol. i. p. 29.—Lindley, Synopsis, p. 186.—Hooker, British Flora, vol. i. p. 9.

The whole plant larger, and of a stouter habit, than *P. vulgaris*; the leaves a much lighter green, and more veiny. *Scape* from four to nine inches high, supporting a single flower. *Corolla* rich purple colour, larger, more equally divided and reticulated, with numerous darker veins. The leaves are all radical, and, as well as the scape, more or less covered with a glutinous exudation, but especially the upper part of the latter.

Habitat.—In elevated marshy ground, in the western part of the county of Cork, and at Kenmare.

Perennial; flowering in May.

The natural order Lentibulariæ of Richard is composed of two small genera of British plants—*Pinguicula* and *Utricularia*; which are remarkably beautiful water or bog plants. *Pinguicula grandiflora* and *vulgaris* may be grown to a high state of perfection by cultivation, especially the former, which is the largest and most beautiful of the genera. This interesting species we have cultivated in various ways, and under circumstances which warrant us in saying, that it is by no means difficult of cultivation. It will grow, and rapidly propagate itself, if planted in a moderately shady situation, in a mixture of equal parts of loam, heath mould, and white sand; during the time of flowering, it should be freely supplied with water. If protected with a common garden-frame, the flowering season will be prolonged, and the richness of colour and beauty of the flowers greatly increased. Towards autumn the leaves and roots gradually decay, and there are formed small round leafy buds or hybernacula, about half an inch in diameter, with several small ones attached to its base: each of which being capable of forming new plants, may either be allowed to remain, or be separated in the spring for the purpose of increase. The singular change of this plant, from a tender and exceedingly succulent, foliaceous state, to a compact and comparatively hard leafy bud, is very remarkable, and has evidently been so designed by Him who made all things according to his own purpose, in order to its preservation during the cold of winter; for if a plant so delicate as this did not undergo some change in order to its own preservation, or produce seed more abundantly than it usually does, the probability is that it would soon become extinct.

2. *P. vulga'ris*, (Fig. 28.) common *Butterwort*, *Yorkshire Sanicle*.

Spur cylindrical, tapering, acute, as long as the entire unequally lobed and veinless limb of the corolla, capsule ovate.

English Botany, t. 70.—English Flora, vol. i. p. 28.—Lindley, Synopsis, p. 186.—Hooker, British Flora, vol. i. p. 9.

Leaves radical, ovate, obtuse, thick, fleshy, and glutinous, the margins involute, covered with minute erect crystalline points, which are most abundant on those plants grown in shady situations. *Scape* from three to nine inches long, single flowered. *Corolla* purple, its segments unequal, entire; palate covered with white hairs; the spur sometimes

lighter coloured than the segments. *Anther* one celled, vertical, covered by the dilated lobe of the *stigma*. *Capsule* ovate. *Seed* numerous, rough.

A variety with white flowers was found by Mr. Wood on a boggy piece of ground about seven miles from Dumfries, on the right hand of the Dalbaettie road, Lochend.

Habitat.—In bogs and damp heathy situations, Yorkshire, Derbyshire, Nottinghamshire, Worcestershire, Norfolk, &c.; but most abundant in the northern parts of the kingdom.

Perennial; flowering in May and June.

This, like *P. grandiflora*, is capable of cultivation, and is highly ornamental in patches in boggy situations, or alpine borders; it also forms buds or hybernacula, by which it may be preserved during the winter months without difficulty; and with the same treatment in cultivation, it will succeed equally well; and although not so large or handsome, it is nevertheless a beautiful and graceful plant.

The remarkably greasy feel of the leaves is said to have caused it to be applied to chaps and sore nipples, from whence it has received the name of Yorkshire Sanicle, and *Sanicula montana*. The word *sanicula* is derived from *sano*, to heal or cure. The leaves are also put into broth by the common people in Wales, and taken as a cathartic. This, like many other marshy plants, has been accused of occasioning the flukes (*fascicola hepatica*), or rot in sheep; but whether this or any other plant is the immediate cause of the disease, is very doubtful. The juice of the leaves coagulates milk, and may be used as a substitute for rennet in the manufacture of cheese. This property is well known among the poor people in the northern parts of Scotland; and Linnæus says, that when rein-deer's milk, while warm, is poured on the leaves, and allowed to stand a day or two, it becomes ascendent, acquires consistence, and a certain degree of tenacity; neither the cream nor the serum separate; and in this form it is considered by the Swedes and Norwegians a very grateful food. From its property of coagulating milk is derived the English name Butterwort. It is sometimes erroneously called Marsh Violet.

3. *P. alpi'na*, (Fig. 29.) *alpine Butterwort*. Spur conical and curved, shorter than the unequal limb of the corolla, lower lip retuse, scape smooth, capsule conical.

Graham in English Botany Supplement, t. 2747.—Hooker, British Flora, vol. i. p. 9.

Leaves radical, oblong, their margins involute, occasionally tinged with purple, about the size of *P. Lusitanica*, but less transparent, and more resembling in texture those of *P. vulgaris*. *Corolla* light yellow, tinged with green, unequally divided, lower segment larger and more prominent than the others, retuse, having at the base a tuft of yellow hairs. *Spur* very short and conical.

Habitat.—Bogs in Scotland, very rare; Isle of Skye—Mr. James M'Kay; bogs of Aughterflow and Shannon, Ross-shire.

Perennial; flowering in June.

This is a very pretty little delicate plant, and a very interesting addition to our list of British plants; it appears to have been overlooked by Sir J. E. Smith, as *P. Lusitanica*.

4. *P. Lusitan'ica*, (Fig. 30.) *pale Butterwort*. Spur cylindrical, obtuse, shorter than the nearly regular limb of the corolla, scape hairy, as well as the leaves, which are thin and veiny, capsule globose.

English Botany, t. 145.—English Flora, vol. i. p. 28.—Lindley, Synopsis, p. 186.—Hooker, British Flora, vol. i. p. 10.

Leaves radical, ovate, obtuse, pale green, semi-transparent, and intersected with numerous purple or reddish veins. *Scape* from three to six inches high, more or less clothed with hairs, which are tipped with small glands. *Corolla* pale purple, the throat yellow, beautifully streaked with red. *Spur* light yellow.

Habitat.—In wet moors and boggy situations; Dorsetshire, Hampshire, Devonshire, and Cornwall. "Plentiful in the Hebrides and Ireland; but most abundant in the extreme north of Scotland, near Cape Wrath, growing among *Jungermannia cochleariformis* and *Arbutus alpina*"—(Hooker). We have collected it abundantly on the Isle of Arran.

Perennial; flowering in June and July.

GENUS IV. UTRICULA'RIA. *Bladderwort*.

Nat. Ord. LENTIBULA'RIÆ.

GEN. CHAR. *Calyx* permanent, of two ovate equal leaves. *Corolla* personate, spurred. *Germen* globose. *Style* short. *Stigma* two-lipped. *Capsule* one-celled. *Seeds* numerous, small, attached to a central globose receptacle. Name from *Utriculus*, a little bladder or bottle.

1. *U. vulga'ris*, (Fig. 31.) *greater Bladderwort*, or *Greater-hooded Milfoil*. Spur of the corolla conical, upper lip entire, the length of the palate, leaves capillary, repeatedly and unequally divided, bristly at the margin.

English Botany, t. 253.—English Flora, vol. i. p. 30.—Lindley, Synopsis, p. 186.—Hooker, British Flora, vol. i. p. 10.

Root long and fibrous, much branched. *Scape* erect, from four to twelve inches long, with lanceolate membranous *bractea* at unequal distances, which, as well as the *calyx* and upper part of the scape, are of a purplish colour, and bearing numerous large bright yellow *flowers*



31. *Utricularia vulgaris.*



32. *Utricularia intermedia.*



33. *Utricularia minor.*



34. *Lycopodium Europæus.*



35. *Salvia Verbenaca.*



36. *Salvia pratensis.*

Lower lip of the *corolla* convex, larger than the upper, with a projecting palate which closes the mouth. *Spur* short, bent downwards. *Leaves* growing upon the submerged *shoots* or *runners* without order, are capillary, multifid, more or less bristly at the margin, and bear numerous small membranous and beautiful reticulated *bladders*, or vesicles.

Habitat.—Ditches and pools, not uncommon. In the neighbourhood of Lincoln, this plant grows in great perfection, from whence we have specimens with the scape about twelve inches long, and bearing numerous flowers, but seldom more than one or two are expanded at the same time.

Perennial ; flowering from June to August.

2. *U. intermedia*, (Fig. 32.) *intermediate Bladderwort*. *Spur* of the corolla conical, upper lip entire, somewhat flat, twice the length of the palate, leaves tripartite, their segments dichotomous, linear, and flat.

English Botany, t. 2489.—English Flora, vol. i. p. 30.—Lindley, Synopsis, p. 186.—Hooker, British Flora, vol. i. p. 10.

In general appearance, this species much resembles the last, but is smaller, more leafy, the segments of the leaves broader, with a mid-rib arising from the stem, and branching off through the centre of each segment. The bladders are not mixed with the leaves, but arise from branched stalks separate from the leaves ; the flowers smaller, paler coloured. The shoots are frequently terminated by a mass of gemmæ or buds (as seen in our Figure), by which the plant is propagated ; in the young state it has the appearance of a number of granular bodies immersed in a mass of short hair or wool.

Habitat.—Ditches and pools ; less common than the preceding, but probably passed by as the same. We have beautiful specimens from the neighbourhood of Wisbeach. It has also been found about Dublin and Bantry, in Ireland ; in Rescobie Lake, Forfar ; and in Elginshire.

Perennial ; flowering in June and July.

3. *U. minor*, (Fig. 33.) *lesser Bladderwort*. *Spur* of the corolla very short, obtuse keeled, upper lip about the length of the palate, leaves subtripartite, the segments linear, smooth.

English Botany, t. 254.—English Flora, vol. i. p. 31.—Lindley, Synopsis, p. 186.—Hooker, British Flora, vol. i. p. 11.

The smallest of the British species. *Flowers* pale yellow, smaller. *Spur* shorter, the upper lip scarcely closing the palate. The reticulated bladder-like bodies are mixed among the leaves, more numerous, and not stalked as in the last species. The leaves irregularly tripartite and smooth. Like the preceding, this propagates itself by buds or gemmæ, as perhaps *U. vulgaris* also.

Habitat.—Ditches and wet places, rare ; about Edinburgh, Loch

Sloy, and "in many parts of Scotland, extending its range even to Skye"—(Hook.)

Perennial; flowering June and July.

The plants in this genus are extremely interesting, from the crested vesicular, or bladder-like, bodies that are developed on their immersed stems, leaves, and even roots. During certain seasons of the year the whole plant is submerged, and if the vesicles are then examined (as was remarked by Hayne) they will be found filled with water; but as the season advances, and the flowers begin to be developed, it is necessary they should be elevated above the surface of the water. To accomplish this, the little bladders, which have an opening closed by an elastic valve, are now found to contain air in place of the water, by which means the whole plant is buoyed up and rises to the surface; the flowers then expand themselves, and perform the functions necessary for the fertilization of the ovules, and the seeds are ripened; after which the air again gives place to water, the whole plant sinks to the bottom, and carries with it its seed, thus depositing it in the situation and soil most fitted for its propagation. The means by which the water is displaced in the vesicles and filled with air, is not satisfactorily known. It "is probably separated by the vital agency of the vegetable, and during its gradual evolution the water is expelled, and is prevented returning either by the mechanical structure of the valve, or by the constant evolution of air"—(Burnett).

Few instances in the economy of vegetation more forcibly arrest the attention, than the beautiful contrivance displayed in this curious genus of aquatic plants. They are found both in hot and in cold countries, but far more abundant in the former than the latter. In Great Britain, their natural habitats are for the most part in stagnant pools, lakes, and clear water—frequently attached to the bottom, several feet below the surface; in such situations they remain securely protected from the severity of winter, through the medium of the scarcely varying temperature of the element by which they are surrounded. There are many other admirable contrivances of nature which equally illustrate the unerring means by which PROVIDENCE accomplishes his designs in the vast field of vegetable creation. We may here mention the beautiful aquatic, *Pontederia crassipes*, introduced into this country from Guiana in 1825. This, although a water plant, will flourish for a considerable time in a pot of light earth; and when grown in this way, the leaves are large, with fleshy stalks of equal thickness throughout: but if the plant is placed in water, the leaf-stalks become inflated with air, frequently assuming an orbicular form, and equal in diameter to the leaf itself. If the plant be again elevated above the water, the roots still remaining within it, the air will be expelled, and the stalks resume their former appearance.

GENUS V. LYCO'PUS.† *Gipsywort*.

Nat. Ord. LABIATÆ.

GEN. CHAR. *Calyx* tubular, permanent, divided into five narrow acute segments. *Corolla* tubular, nearly equal, four cleft, the upper segment broadest, and notched. *Stamens* simple. Name from *λυκος*, a *wolf*, and *πους*, a *foot*; from the imaginary likeness in the leaves of this plant to a wolf's paw.

1. *L. Europæus*, (Fig. 34.) *common Gipsywort, Water Horehound, or Wolf's Claw*. Leaves opposite, deeply and irregularly serrated; flowers in whorls.

English Botany, t. 1105.—English Flora, vol. i. p. 33.—Lindley, Synopsis, p. 197.—Hooker, British Flora, vol. i. p. 11.

Root fibrous. *Stem* upright, spreading by lateral suckers, four-cornered, and slightly hairy. *Leaves* opposite, on short footstalks, the alternate pairs crossing each other (*decussate*), ovato-lanceolate, deeply and unequally serrated, the lower ones especially, often pinnatifid. *Flowers* small, sessile, surrounding the stem in dense whorls at the base of the upper leaves. *Calyx* hairy, upper segment the largest. *Corolla* whitish, with purple dots, the tube hairy within. *Stamens* rather prominent, spreading. *Anther* of two pointed lobes. *Stigma* bifid. *Seeds* four, obovate, depressed in the centre.

Habitat.—Banks of rivers, ditches, and moist meadows, frequent; less so in Scotland.

Perennial; flowering June to August.

This plant has long been considered a febrifuge. It is astringent, and has been administered to suppress internal hæmorrhages. It abounds in a colouring matter which dyes a good black, and according to Withering, it was formerly used by gypsies, for the purpose of staining their skin; hence the English name Gipsywort.

GENUS VI. SALVIA. *Sage or Clary*.

Nat. Ord. LABIATÆ.

GEN. CHAR. *Calyx* tubular, permanent, unequally two-lipped, the lower bifid, the upper three-toothed. *Corolla* labiate, tube compressed and dilated upwards, lower lip of three lobes, the upper concave. *Filaments* with two divaricated branches, one only

† This and the following genus *Salvia*, according to their natural affinity, belong to the Class *Didynamia*, and Order *Gymnospermia*, to which we were much disposed to remove them; but since it is according to the Linnæan rules first to count the number of stamens to ascertain the Class to which the plant under examination belongs; and the species in this genera having only two, place them in the situation which they now hold, although they agree in every other particular with their natural allies in the Class *Didynamia*.

bearing a perfect single-celled *anther*. Name a derivative of *salvere*, to be in good health; in allusion to the cordial or health-restoring properties of the species of this genera.

1. *S. Verbena'ca*, (Fig. 35.) *wild English Clary, or Sage*. Leaves sinuated, serrated, and rugose, corolla contracted, and but little longer than the calyx.

English Botany, t. 154.—English Flora, vol. i. p. 35.—Lindley, Synopsis, p. 197.—Hooker, British Flora, vol. i. p. 11.

Stem from one to two feet high, four-cornered, branched and downy. *Leaves* aromatic, wrinkled with veins, and more or less downy, the lower stalked and ovate, the upper ones sessile, acute, scarcely lobed, but more deeply serrated. *Bracteas* two under each whorl of flowers, as long as the calyx, cordate, acute, ciliated. *Calyx* hairy, terminating in a fine point or mucro. *Corolla* purplish blue, small, upper lip concave, compressed, lower three lobed, the middle one the largest.

Habitat.—In waste land, meadows, and road sides, especially in a gravelly or chalky soil, common. In Scotland very rare, Salisbury Craigs, Burntisland, and Corstorphin.

Perennial; in flower from June to September.

The seeds of this plant produce a great quantity of mucilage when moistened with water, which is innocuous and insipid; it has been used for the purpose of removing dust and sand from under the eye-lids, and, by its enveloping the particles, removes them with safety, from which property it has derived the name of *Clary*, or *clear-eye*.

2. *S. pratensis*, (Fig. 36.) *Meadow Clary or Sage*. Leaves oblong, unequally crenate, stalked, upper ones sessile, clasping the stem, bracteas small, calyx much shorter than the corolla, which is glandular at the summit.

English Botany, t. 153.—English Flora, vol. i. p. 34.—Lindley, Synopsis, p. 197.—Hooker, British Flora, vol. i. p. 11.

Whole plant more or less downy, with but little scent, from one to two feet high. *Stem* square. Lower *leaves* oblong, cordate at the base, stalked, upper sessile and lanceolate. *Flowers* in numerous whorls. *Calyx* short. *Corolla* purplish blue, large, and beautiful.

Habitat.—Dry meadows and hedges, England, very rare; near Cobham, in Kent. Our drawing is made from a specimen in the collection of the Sheffield Literary and Philosophical Society, which appears to have been communicated by the late Mr. Sowerby.

Perennial; flowering in July.

This plant is frequently cultivated in gardens, and is a very pretty border flower, flourishing best in a rather dry and sandy soil, and increasing, like most other labiate plants, by suckers as well as seed.

The genus *Salvia*, although containing only two British species, and these of little or no value, either as condiments or medicine, is never-



37.

Circæa Lutetiana.



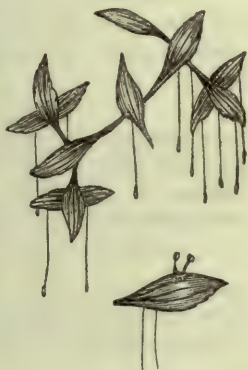
38.

Circæa alpina.



39.

Fraxinus excelsior.



40.

Lemna trisulca.



41.

Lemna polyrrhiza.



42.

Lemna gibba.



43.

Lemna minor.

theless extensive, and contains many very elegant and highly ornamental exotic flowers; some are esteemed of great value, either from their cordial or stomachic qualities, or from their tonic and bitter principle; the whole are more or less aromatic, which is owing to the presence of a volatile oil contained in small vesicles or reservoirs in the leaves. *S. splendens*, *Indica*, *formosa*, &c. are well known, as adding greatly to the beauty of our warm flower borders and conservatories, by their graceful form and brilliant colours. *S. officinalis*, or common garden Sage, is much used in cookery as a condiment, its aroma and bitterness assisting the stomach to digest fat and luscious meats. In ancient times, Sage was celebrated as a remedy of great efficacy, but is not now considered an article of so much importance. It possesses the remarkable property of resisting the putrefaction of animal substances, for which reason its infusion is well known as a remedy in cases of ulcerated sore throats; it is also considered serviceable in debility of the stomach and nervous system. The Chinese are said to prefer its infusion to that of their own tea: the Dutch at one time carried on a profitable traffic with them, exchanging one pound of dried Sage leaves for four of China tea. Its oil is remarkable, from containing a large portion of camphor. Rhenish wines owe their flavour in a great measure to the use of the flowers of *S. glutinosa*. Sage apples, which are greatly esteemed as food in Greece and Turkey, are morbid growths upon the stem of *S. pomifera* and other species of Sage, produced by the puncture of insects, which causes the developement of the apple, in a similar way to which the galls are produced upon the Oak.

GENUS VII. CIRCÆ'A. *Enchanter's Night-shade.*

Nat. Ord. CIRCÆACEÆ.†

GEN. CHAR. *Calyx* superior, tubular at the base, divided into two ovate obtuse deflexed segments. *Corolla* of two petals, alternate with the segments of the calyx, and inserted into it. *Stamens* alternate with the petals. *Capsule* two-celled, with one seed in each.—Named from the famous mythological enchantress *Circe*, who is said to have been well skilled in the nature of poisonous plants.

1. *C. Lute'tiana*, (Fig. 37.) *common Enchanter's Night-shade*. Stem erect, downy, leaves opposite, ovato-cordate, acuminate, slightly toothed, stalked, opaque, and downy.

† *Circeæaceæ* of Lindley, usually associated with *Onagrarix* of Jussieu, is separated from it on account of its differing in many important particulars, especially in its large fleshy *disk*, the *ovarium* two-celled, with a single erect *ovula* in each cell.

English Botany, t. 1056.—English Flora, vol. i. p. 15.—Lindley, Synopsis, p. 109.—Hooker, British Flora, vol. i. p. 12.

Root freely creeping. *Stem* downy, from one to two feet high. *Leaves* opposite, on footstalks, the lower ones nearly cordate, the upper narrower, ovate acuminate, waved or slightly toothed, more or less downy, sometimes quite smooth. *Racemes* terminal and lateral, occasionally branched, downy, with narrow bracteas. *Calyx* reflexed, reddish green. *Corolla* pinkish or white, inversely heart-shaped, patent. *Fruit* oblong, thickly set, with white hooked hairs. *Pedicels* solitary, rarely two or three together, reflexed in fruit.

Habitat.—Shady groves and woods, common.

Perennial ; flowering in June and July.

2. *C. alpi'na*, (Fig. 38.) *alpine Enchanter's Night-shade*. *Stem* nearly smooth, ascending, leaves opposite, cordate, toothed, smooth and shining, stalked.

English Botany, t. 1057.—English Flora, vol. i. p. 16.—Lindley, Synopsis, p. 110.—Hooker, British Flora, vol. i. p. 12.

β. ma'jor ; larger, and more downy. *C. interme'dia*, Ehrh.

Differing but little from the preceding ; indeed, Greville, in his *Flora Edinensis*, makes it but a variety, and says—"It has been noticed by Dr. Graham, that, in the Edinburgh Botanic Garden, the two species pass into each other, which a minute examination has confirmed." In the specimens which we have collected in various parts of Scotland, the leaves are certainly more cordate, sharper and deeper toothed, more shining, and on longer footstalks, the stem less downy, and the whole plant of more humble growth. The flowers and fruit are alike in both species. The variety *β* of Smith we have not seen.

Habitat.—Woods and moist stony situations in the north of England and in Scotland, growing by the side of the Lakes ; near the sea-shore, Isle of Arran, plentiful.

Perennial ; flowering July and August.

During the dark ages of superstition, Enchanter's Night-shade was supposed to possess many wonderful properties ; but we do not now find it to be either injurious or in any way valuable. "It was much celebrated in the mysteries of witchcraft, and for the purpose of raising the devil, as its name imports. It grows amid the mouldering bones and decayed coffins in the ruinous vaults of Sleaford church, Lincolnshire."

"Thrice round the grave Circæa prints her tread,
And chaunts the numbers which disturb the dead."

Darwin's Loves of the Plants.

GENUS VIII. FRAXINUS. *Common Ash.*

Nat. Ord. OLEACEÆ.†

GEN. CHAR. *Calyx* absent, or in four ovate segments. *Corolla* absent, or of four linear petals. *Capsule* flat and foliaceous at the extremity, two-celled, with a seed in each cell (a *Samara*). *Seed* solitary, flat, brown, and pendulous. *Flowers* sometimes without stamens, rarely with stamens only.—The name *Fraxinus* is of doubtful origin: modern botanists, in conformity with the opinion of Linnæus, suppose it to have been taken from the Greek *Φραξις*, a separation; in allusion to the facility with which the wood may be split. Up to the sixteenth century, and in some instances of later date, the name *Fraxinus* appears to have been applied by different nations to very distinct plants, and the synonymes are in consequence much confused. According to Parkinson, the Greek name for the Ash is *μελιά*, *Melia*; while the Latins give it the name of *Fraxinus*, by which it is now universally known. It may be interesting to our young readers to be reminded that the Syrian plant, *Melia Azedarach*, is of robust growth, with irregularly pinnate leaves, in general appearance not unlike our common Ash, *Fraxinus excelsior*, with which it would seem to have been confounded.

1. *F. excelsior*, (Fig. 39.) *common Ash*. *Calyx* and *corolla* wanting, leaves pinnate, leaflets lanceolate acuminate scarcely stalked, serrated.

English Botany, t. 1692.—English Flora, vol. i. p. 14.—Lindley, Synopsis, p. 71.—Hooker, British Flora, vol. i. p. 12.—β. *heterophylla*, (*simple-leaved Ash*,) leaves both simple and compound, Eng. Bot. t. 2476; Eng. Flor. vol. i. p. 14.—*F. simplicifolia*, Willd.—*F. excelsior*, var. 2. With.

One of the most noble, and not the least elegant and ornamental, of our native trees. The young trees, and the branches of the old ones are clothed with grey bark, the wood tough and white. *Buds* of a dark brown or black colour, breaking into leaf late in the season. *Leaves* pinnate. *Common leaf-stalk* channelled above, with from four to eight pairs and an odd one of opposite, serrated, acuminate leaflets, which are

† The natural order *Oleaceæ* contains many ornamental shrubs and trees, some of which produce fragrant flowers. The most important and best known genera are the Olive, *Olea*; the Manna Ash, *Ornus*; the Lilac, *Syringa*; the Privet, *Ligustrum*; and the Ash, *Fraxinus*. They were united with *Jasminææ*, and to which they are still referred by some authors. The most remarkable circumstance, however, in favour of their separation, is the fact, as observed by De Candolle, of their capability of being grafted upon each other, proving the similitude of their vascular structure and sap; but the Jasmine cannot be grafted upon any of the Olive tribe, which is demonstrative of the dissimilitude of their structure and sap, and confirms the propriety of the separation of these two tribes.

frequently, at the base and angles of the veins on the under side, thickly clothed with short pubescence. *Flowers* in axillary clusters, appearing before the leaves, at the extremity of the last year's wood, very simple, without either calyx or corolla, sometimes produced with pistil only, while others on the same tree bear both pistil and stamens: hence we find that in autumn some trees bear abundance of seed, while others are barren. *Filaments* opposite, inserted between the petals. *Anthers* with four furrows. *Style* short. *Stigma* divided. *Capsule* frequently cleft at the extremity.— β . That this is only a variety is probable from its capability of being propagated alone by grafting; at least, we know of no instance where it has reproduced itself by seed.

Habitat.—Woods and hedges, common; β . rare.

Perennial; flowering in April and May.

The graceful form and elegant appearance of the Ash are well known; the tree is justly termed by Virgil "*Pulcherrima sylvis*." It varies exceedingly in its form: sometimes the lower branches are long and pendent, while the upper are spreading or erect; at others the extremities of the lower branches are curved upwards. The *weeping Ash*, which gives such a grotesque but highly ornamental appearance to the pleasure-ground and the lawn, is said to have been first discovered in a field at Gamlingay: it can only be propagated by grafting. The Ash is not less useful than beautiful: its white wood is a very valuable timber, tough, light, and straight-grained, which renders it particularly useful to wheelwrights, and for implements of husbandry. The bark, when fresh, has a bitter taste, slightly diuretic and tonic. The leaves, which have a similar flavour, have been employed to adulterate China tea; they are said to be cathartic, but very much inferior to those of senna. It was thought by the ancients, that a snake would not endure the shade of an Ash; and we are informed by Pliny that the Ash is obnoxious to serpents, and its branches are often hung about children's beds to keep off the gnats. In warm climates, a sort of manna exudes from this species, to which the leaves probably owe their aperient quality. The manna of the shops—which is a peculiar saccharine substance, useful as a laxative for infants—is procured from several species of *Ornus*, as *O. Europæus*, *rotundifolia*, *floribunda*, &c., natives of the southern parts of Europe. It exudes spontaneously from the stems and branches in warm weather, and is collected and sold by the name of "manna in the tear." It is procured in greater abundance, however, by making incisions in the bark, from which it exudes in the form of a thick juice, which concretes in flaky masses: but is procured freer from impurities, and of a finer quality, by making the juice concrete on straws or chips, fastened near the incisions for that purpose. The saccharine matter of manna differs from common sugar by its not fermenting with water and yeast, for which reason it is considered a distinct principle, and called "mannite." The smooth bark of the Ash

is a favourite habitat of many species of crustaceous Lichens ; and on it alone have we found the beautiful genus of insects, *Clulocornus* ; the species *C. renipustulatus* is very plentiful in plantations in Nottinghamshire and Yorkshire.

GENUS IX. LEM'NA. *Duckweed*.

Nat. Ord. PIS'TIACEÆ.

GEN. CHAR. *Perianth* single, membranous, inflated. *Fruit* a thin transparent membranous utricle, single-seeded. Small floating smooth lenticular plants, with lateral proliferous fronds. Capable of reproduction by seed, but most abundantly by gemmæ or buds ; each frond having one or more pendulous thread-like roots.—Name said to be derived from λεμμα, *Lemma*, the meaning of which, in reference to the plants in question, is very obscure ; some authors suppose it to be from λεπις, *Lepis*, in allusion to the squamous or scale-like appearance of the fronds. Jussieu, in consideration of the convex or lenticular-shaped fronds of this genus, has given them the more descriptive, and therefore better, name of *Lenticula*, for *Lemna*. Aware, however, of the inconvenience, and even disgust, which is felt at the needless change often recommended in opposition to the advantages which would arise from a less mutable nomenclature, we prefer retaining the latter.

1. *L. trisul'ca*, (Fig. 40.) *Ivy-leaved Duckweed*. Fronds stalked, thin, elliptico-lanceolate, serrated at the extremity, root slender, and solitary.

English Botany, t. 926.—English Flora, vol. i. p. 32.—Lindley, Synopsis, p. 251.—Hooker, British Flora, vol. i. p. 13.

Fronds from half to three quarters of an inch long, pale green, pellucid at the margin, frequently waved or serrated ; young plants are rapidly produced from lateral clefts in the broadest part of the fronds, and grow mostly at right angles with the parent plant, and of the same form : these also become proliferous while attached to the parent frond, thus becoming repeatedly compound, each frond emitting from the centre of its under side a solitary pendulous root, curiously tipped at the extremity, with a small conical *sheath*. *Flower* very small, arising in this and the rest of the genus from lateral clefts in the fronds. *Stamens* two, unequal. *Anther* divided, globular. *Stigma* obtuse, scarcely protruding from the perianth.

Habitat.—Clear stagnant waters : not very common in England, but more so than in Scotland. Plentiful in the drains about Lincoln, and Newark, Nottinghamshire.

Annual ; flowering in June and July.

2. *L. polyrrhi'za*, (Fig. 41.) *greater Duckweed*. Fronds ovato-rotundate compressed, roots numerous in clusters.

English Botany, t. 2458.—English Flora, vol. i. p. 33.—Lindley, Synopsis, p. 252.—Hooker, British Flora, vol. i. p. 13.

The largest of the genus, and well distinguished by its clustered roots growing from the point of union where the fronds unite. *Fronds* about half an inch long, and nearly as broad, striated above with a dark purple margin, somewhat convex beneath, of a purple colour. *Flowers* not known in Britain. "Wiggers records a young German, named Graver, as having found the *flowers*, situated where the *fronds* overlay each other, in July and August. The *seed* proved larger and flatter than in *L. gibba*."—Smith.

Habitat.—Ditches and pools, not common; Nottingham meadows. Annual.

3. *L. gib'ba*, (Fig. 42.) *gibbous Duckweed*. Fronds broadly obovate, slightly convex above, hemispherical, and pale beneath, roots solitary.

English Botany, t. 1233.—English Flora, vol. i. p. 32.—Lindley, Synopsis, p. 252.—Hooker, British Flora, vol. i. p. 13.

Larger than *L. minor*. *Fronds* green above, in a young state flat, pale beneath, and gradually swelling until almost hemispherical, first commencing to swell at the base of the root, until at length the enlarged pellucid cellules burst; the fronds then turn yellow, and shortly decay. *Roots* solitary. *Flowers* from the margin of the frond, *perianth* scarcely visible.—This species somewhat resembles *L. minor*, but is readily distinguished by its large cellular and gibbous, or hemispherical under surface. "*Capsule* four-seeded. *Seed* furrowed, not transversely placed, but with the hilum towards the top of the capsule."—Wilson in Br. Fl.

Habitat.—In stagnant waters, not so common as the following species.

Annual; flowering from June to September.

4. *L. mi'nor*, (Fig. 43.) *lesser Duckweed*. Fronds nearly ovate compressed, slightly convex beneath, roots solitary.

English Botany, t. 1095.—English Flora, vol. i. p. 32.—Lindley, Synopsis, p. 252.—Hooker, British Flora, vol. i. p. 13.

Fronds from one to two lines long, irregular, plane or slightly convex above as well as beneath, where it is of a pale colour, somewhat fleshy, and of a more compact texture than *L. gibba*. *Flowers* similar to the last. "The *capsule* is single-seeded; *seed* transverse, with its hilum 'directed towards the narrow end of the frond.'"—Hooker.—This is the most common of all the species, increasing with great rapidity by gemmæ or buds, frequently covering the surface of extensive pools of stagnant water, and often considered a troublesome intruder in fish-ponds. Ducks and other water-fowl feed upon it, hence

the English name, *Duckweed*.—We find a variety of this species in the pools about Sheffield, with the *fronds* elliptical, ovate, larger, thinner, slightly convex above, and of a more compact texture, a much paler colour, and slightly concave beneath.

Habitat.—Stagnant waters, very common.

Annual; flowering in June and July.

These minute plants, called *Water-lens*, *Duckmeat*, or *Duckweed*, although frequently looked upon with disgust, and reviled with great acrimony, are nevertheless of vast utility, particularly in covering the surface of water, which becomes, during a great part of the summer, a depository for the larvæ of insects, to an extent almost incredible, and thus affording an abundant supply of food for fish. They are of the greatest utility in covering, wholly or partially, the surface of preserve ponds for carp and tench, in which we have observed the fish increase and thrive with great rapidity, while in those ponds which are exposed, and in which neither plants nor insects are allowed to accumulate, and consequently the supply of food scanty, the fish do not either increase to that extent, nor are they in that condition, as in the former case. This, however, is not their only utility:—there is no doubt but the layer of vegetating matter, which they form on the surface of stagnant water and pools, is a great means of purifying it of much of the noxious effluvia which emanates from the decaying matter accumulated in such situations. We thus perceive, even in these apparently insignificant weeds, the incontrovertible evidence that nothing has been made in vain.

The research and investigation of scientific botanists have of late unveiled many of the secrets of nature, and some of the recent and most valuable discoveries are associated with the names of the noblest benefactors of our age. But in this most interesting, yet intricate and difficult branch of Natural History—Vegetable Physiology, there is yet a vast field to explore, and much remains to be done before the opinions of even the most eminent physiologists can be reconciled. The causes of irritation of plants have been speculated upon, and some have attempted to account for this singular phenomenon by referring it to mechanical structure, while others have ascribed it to the presence of a vital principle analagous to that of animals. To show that the latter is most accordant with the sense in which we are accustomed to view objects endowed with vitality and possessing spontaneous motion, we might refer to the lower orders of the animal and vegetable creation, and, by tracing either to their simplest form, descend till the distinction is lost, and we find both united in the same individual. In accordance with what has just been stated, the roots of the various species of *Lemna* will be found interesting, and in some degree illustrative of the preceding remarks. If a plant of *Lemna*, with a full-grown root, be removed from the water, and held in an inverted position for a few minutes in a dry atmosphere, the root being composed of a very

simple and slender tube, it will suddenly but almost imperceptibly collapse. The root will then incline a little to one side, and an irregular, jerking, rotatory motion, from south-east to north, will commence. With slight interruptions, this motion will continue until the root is completely twisted, and in appearance not unlike an exceedingly delicate thread of silk. For some time before and after the circular motion has subsided, it will evince a convulsive, tremulous emotion, like the writhings of an insect suffering from acute pain. But if the plant be again carefully placed in water, with its root downwards, the same number of revolutions will be performed in a contrary direction to the first, and when fully untwined, it will assume its original form, apparently without injury.

GENUS X. CLA'DIUM. *Twig-rush.*

Nat. Ord. CYPERA'CEÆ.

GEN. CHAR. *Perianth* single, glumaceous. *Glumes* concave, of one piece, single-flowered; outer ones smaller, mostly barren. *Fruit* a nut, which has three slight angles, covered with a loose coat, and destitute of bristles (*setæ*) at the base.—Named from κλαδος, (*ramus*), a branch, or twig; probably on account of the many-branched panicle.

1. *C. Maris'cus*, (Fig. 44.) *prickly Twig-rush*. Panicle erect, many times divided, and leafy, spikelets capitate, stem round, smooth, leafy, the margins and keel of the leaves finely serrated.

English Botany, t. 950.—English Flora, vol. i. p. 36.—Lindley, Synops. p. 281.—Hooker, British Flora, vol. i. p. 14.

Root strong and fleshy. *Stem* three to five feet high, erect, smooth, round, becoming angular at the top, leafy, *joints* polished. *Leaves* as long as the stem, striated, tapering to the extremity, the margins and keel cartilaginous, finely serrated with sharp almost prickly teeth. *Panicle* with from two to six pairs of repeatedly divided, angular, and bracteated branches, each bearing a cluster of from six to eight ovate spikelets, each of which is composed of six or eight light-brown ovate glumes, the inner ones the longest. External coat of the nut large, brown, and shining. *Stamens* longer than the glume. *Style* as long as the stamens, capillary, deciduous. *Stigmas* two or four.

Habitat.—In fens and boggy places, but not common. Lake, near Rosthern Mere, Cheshire,—Mr. Campbell. In Norfolk, Kent, Cambridge, &c. Very rare in Scotland.

Perennial; flowering from July to August.



44.

Cladium Mariscus



45.

Anthoxanthum odoratum.



46

Valeriana rubra.



47.

Valeriana dioica.



48.

Valeriana officinalis.



49.

Valeriana Pyrenaica.

ORDER II.

DIGYN'IA. 2 PISTILS.

GENUS I. ANTHOXAN'THUM. *Vernal Grass.*

Nat. Ord. GRAM'INEÆ.

GEN. CHAR. *Glumes* of two unequal valves, containing one perfect and two imperfect florets; the middle floret perfect. *Glumella* of two small awnless valves; the two lateral florets each reduced to a single-awned valve.—Name from *ανθος*, a flower, or bloom, and *ξανθος*, yellow; in allusion to the yellowish hue of the spikes.

1. *A. odora'tum*, Linn. (Fig. 45.) *sweet-scented Vernal Grass*. Panicle spiked, oblong; florets upon short footstalks, and longer than their awns.

English Botany, t. 647.—English Flora, vol. i. p. 37.—Lindley, Synopsis, p. 300.—Hooker, British Flora, vol. i. p. 14.—Sinclair, Hortus Gramineus Woburnensis, p. 134.

Stem ten to eighteen inches high, smooth, slender, two or three jointed. *Leaves* flat, slightly hairy, short, upper ones very short. *Panicle* spiked, erect, somewhat acute, becoming yellow with age, the lower florets sometimes distant. *Glumes* unequal, sharp-pointed, and as well as the footstalks slightly hairy; the outer largest, with a strong dorsal rib and two slighter on each side; the inner valve about half the length, with a single dorsal rib. *Imperfect florets* awned, obtuse, brown, hairy; the inner with a straight awn from the middle of the back, the outer with a longer bent awn from near the base. *Glumelles* of the perfect floret very small, its valves membranous, obtuse, equal. *Stamens* only two, slender, longer than the glumes. *Stigmas* erect, long. *Seed* glossy, brown, obovate, attenuated at the apex.

Habitat.—Meadows and pastures, very common; most frequent in gravelly situations.

Perennial; flowering in May and June.

It is this grass which chiefly gives the peculiar and well-known agreeable scent to new-made hay. The valves of the glumes are thickly studded with small (when dry) pale-coloured dots, and are probably the organs which secrete the volatile matter, the cause of the odour, which is said to be benzoic acid. It is remarkable that the odour of this plant is not given out while in a growing state, but when cut and in the act of drying, it is the strongest. On account of the early and late produce of this plant, it is valuable to farmers in their permanent pasture lands, and it has been proposed to enrich them with it for the

purpose of improving the flavour of mutton. This grass alone does not appear grateful to cattle, but is so when combined with other species. It is most valuable in permanent grazing pastures, especially in the latter part of the season, as it continues until that period to throw out luxuriant stems and leaves.

CLASS III.

TRIAN'DRIA. 3 STAMENS.

ORDER I.

MONOGYN'IA. 1 PISTIL.

GENUS I. VALERIA'NA. *Valerian.*

Nat. Ord. VALERIA'NEÆ.

GEN. CHAR. *Calyx* superior, a thick slightly crenated margin, ultimately expanding into a feathery *pappus*. *Corolla* of one petal, tubular, the limb five cleft, gibbous or spurred on one side at the base. *Fruit* single-seeded, surrounded at the top with the feathery *pappus*.—The derivation of the name is differently given by authors: it is probably from *valeo*, *to be powerful*; on account of its powerful medicinal properties.

* *Flowers with one stamen.*

1. *V. ru'bra*, Linn. (Fig. 46.) *red Valerian*. Tube of the corolla long, with a long spur at the base; leaves ovato-lanceolate.

English Botany, t. 1531.—English Flora, vol. i. p. 42.—Hooker, British Flora, vol. i. p. 22.—*Centran'thus ru'bra*, De Candolle. Lindley, Synopsis, p. 138.

The whole plant smooth, rather glaucous, from one to two feet high, with branching leafy *stems*. *Leaves* opposite, entire, or toothed, sessile, *Flowers* scentless, in numerous unilateral cymose *spikes*, each flower with a pair of opposite bractea about the length of the spur. *Corolla* rose-colour, rarely white. *Fruit* crowned with the involute *pappus*.

Habitat.—Old walls and waste places. Matlock, apparently wild—Mr. Bohler. Chalk pits in Kent, plentiful.

Perennial; flowering from June to September.

This species is probably the outcast of gardens, but is now not uncommon in waste uncultivated places, and on old walls. It is a very

common showy plant in flower gardens, flourishing in almost any soil or situation.

**** Flowers diœcious.**

2. *V. dioica*, Linn. (Fig. 47.) *small Marsh Valerian*. Corolla gibbous at the base; root-leaves simple ovate petiolated, those of the stem lyrato-pinnatifid.

English Botany, t. 628.—English Flora, vol. i. p. 43.—Lindley, Synopsis, p. 138.—Hooker, British Flora, vol. i. p. 23.

Plant from six to eighteen inches high. *Root leaves* mostly entire, with fleshy footstalks; those of the stem have from two to six pairs of more or less toothed opposite leaflets, terminated by a larger one which is three-cleft, the upper pair reduced to bractea. *Flowers* diœcious, rose-coloured, becoming paler in maturity, densely crowded. Those plants bearing stamens only are always much smaller and weaker than the fertile plants. *Stamens* and *pistils* are sometimes present, but rarely perfect in the same individual.

Habitat.—Bogs and marshy meadows, frequent.

Perennial; flowering in June and July.

***** Flowers with three stamens, perfect.**

3. *V. officinalis*, Linn. (Fig. 48.) Corolla gibbous at the base; leaves opposite, all pinnated; leaflets lanceolate, serrated.

English Botany, t. 698.—English Flora, vol. i. p. 43.—Lindley, Synopsis, p. 138.—Hooker, British Flora, vol. i. p. 23.

Root tuberous, with long fibres. *Stem* two to four feet high, hollow, furrowed, erect, smooth, sometimes hairy below. *Leaves* pinnate opposite, clasping the stem, hairy at the base, footstalks of the lower ones elongated. *Leaflets* four to six pairs, opposite or alternate, and a terminal one, mostly lanceolate, strongly veined, and coarsely serrated, nearly uniform, sessile, dark green above, paler and hairy beneath. *Flowers* small, white or light rose-coloured, odorous, in large dense-branched corymbs. *Bractea*s lanceolate connate, waved, ciliated at the base. *Corolla* tubular, slightly gibbous at the base, divided at the margin into five obtuse nearly equal spreading segments. *Stamens* longer than the corolla. *Style* short. *Stigma* bifid. *Capsule* oblongo-ovate, emarginate at the base, compressed, three-ribbed on one side, one on the other, containing a solitary ovate pendulous seed.

Habitat.—Banks by the sides of moist woods and rivers, plentiful.

Perennial; flowering in June and July.

The roots of this plant are tonic, aromatic, antispasmodic, and vermifugal, and have been long exhibited as a remedy in nervous affections. The peculiar odour of these roots is not generally agreeable to Europeans, but those of several species are used in the eastern nations to aromatise their baths, and are highly esteemed as perfumes. Cats

are remarkably fond of these roots; they chew them, roll and rub, themselves on them, and for a time appear intoxicated under their influence. The effect is no less remarkable upon rats, and the root is used by rat-catchers in the same way as oil of anise, to allure them to take their poisonous compounds.

4. *V. Pyrena'ica*, Linn. (Fig. 49.) *heart-leaved Valerian*. Corolla gibbous at the base; leaves large, heart-shaped, toothed, serrated, smooth, petiolated, upper ones pinnate, with one or two pairs of small lanceolate leaflets.

English Botany, t. 1591.—English Flora, vol. i. p. 44.—Lindley, Synopsis, p. 138.—Hooker, British Flora, vol. i. p. 23.

Stem two or three feet high, furrowed, hollow, downy below the insertions of the upper leaves. The root and lower stem *leaves* mostly simple, heart-shaped, acute, stalked, unequally toothed, and sometimes serrated, smooth, the upper leaves pinnate, the terminal leaflet ovato-lanceolate, the lateral ones narrower. The *stalks*, veins, and margins of the upper leaves mostly downy. *Flowers* in dense compound terminal corymbs. *Corolla* slightly gibbous at the base, light rose-colour, in shady situations nearly white, its margin divided into five segments. *Capsule* ribbed, but longer and narrower than those of the above species, as is also the solitary *seed*.

Habitat.—Abundant in the woods near Bretton Hall, Yorkshire, and in various places in Scotland; Campsey Glen, and woods near Glasgow; Collington and Abercorn Wood, near Edinburgh; but probably escaped from gardens. "It is peculiar, I believe, to the Pyrenees."—*Hook*.

Perennial; flowering in June and July.

GENUS II. FE'DIA. VAHL. *Corn-Salad*.

Nat. Ord. VALERIA'NEÆ.

GEN. CHAR. *Calyx* of three to five unequal teeth, first very small, at length crowning the fruit. *Corolla* of one petal, gibbous at the base, the limb of five unequal segments. *Capsule* indehescens, of one fertile and two abortive cells.—The meaning of the word *Fedia* is not satisfactorily known. "*Fedia* is derived from *Fedus*; an ancient word synonymous with *Hædus*, a kid, is not unsuitable to this genus."—*Smith*.

1. *F. olito'ria*, Vahl. (Fig. 50.) *common Corn-Salad, or Lamb's Lettuce*. Flowers capitate, capsule smooth, inflated, subglobose, crowned with three small teeth of the calyx; leaves oblong, obtuse.

English Botany, t. 811.—English Flora, vol. i. p. 45.—Hooker, British Flora, vol. i. p. 23.—*Valerianella olito'ria*, Lindley, Synopsis, p. 138.



50.

Fedia olitoria.



51.

Fedia carinata.



52.

Fedia dentata.



53.

Fedia Auricula.



54

Crocus sativus.



55.

Crocus vernus.

Root small. *Stem* four to twelve inches high, furrowed, more or less hairy. *Leaves* opposite, sessile, lower ones spatulate, stalked, mostly entire, the upper linear, oblong, obtuse, sessile, entire or toothed. *Flowers* in compact heads, surrounded at the base with linear oblong, sometimes divided *bracteas*, forming an *involucre* at the extremity of the forked branches. *Corolla* small, pale blue, tubular, unequally five cleft. *Stamens* inserted at the mouth of the tube. *Stigma* blunt, projecting. *Capsule* smooth, roundish, unequally ribbed, crowned with three small inflexed teeth of the calyx.

Habitat.—A common weed in corn-fields, and gardens in a light soil.

Annual; flowering during most of the summer months. Frequently cultivated as an early salad, but not now so highly esteemed as formerly.

2. *F. carina'ta*, Stev. (Fig. 51.) *carinated Fedia*. Flowers capitate; capsule oblong, obtuse, deeply furrowed in front between the two abortive cells, which are nearly equal in size to the fertile one, crowned with a short tooth of the limb of the calyx.

Hooker, British Flora, vol. i. additions at the end of the volume.—*Valerianel'la carina'ta*, De Candolle. Prodrum, vol. iv. p. 629.

Plant from twelve to eighteen inches high. *Stem* branched from the base, roughish, with short rigid reflexed hairs, which arise principally from the edges of the eight nearly equi-distant ribs. Lower *leaves* spatulate, upper oblong obtuse, sessile, half embracing the stem, entire or slightly toothed, somewhat hairy, especially on the edges towards the base. *Flowers* in terminal heads, pale blue, surrounded at the base with oblong *bracteas*. *Fruit* oblong, obtuse, nearly smooth, deeply furrowed in front by the projecting edges of the two abortive cells, each of which is as large as the fertile one placed at the back, which terminates in a short obtuse tooth; each cell is marked by a narrow longitudinal rib.

Habitat.—Near Ongar, Essex—Mr. E. Forster. Sussex?—Mr. Borrer.

Perennial; flowering in June and July.

Seeds of this plant were obligingly sent us by Mr. Borrer, who had not gathered the plant but in a dried-up state; they were sown in the Sheffield Botanic Garden, and from them our drawing and description has been made. It is allied to *F. olitoria*, but the seed is very different.

3. *F. denta'ta*, Vahl. (Fig. 52.) *smooth narrow-fruited Corn-Salad*. Flowers in loose corymbs, capsule smooth, obpyreiform, crowned with the cupped unequally four-toothed calyx, convex on the back, plain and ribbed in front; stem forked, with a solitary sessile flower in the axils; leaves oblongo-lanceolate obtuse, upper ones especially cut or deeply toothed at the base.

English Flora, vol. i. p. 45.—Hooker, British Flora, vol. i. p. 23.—

Valeria'na denta'ta, Willd. English Botany, t. 1370.—*Valerianel'la denta'ta*, Lindley, Synopsis, p. 138.

β. Capsule clothed with spreading incurved rigid hairs, cup of the calyx small.—*F. mix'ta*, British Flora, ed. 2, vol. i. p. 23.

λ. Capsule clothed with incurved rigid hairs, cup of the calyx large, —*F. eriocar'pa*, British Flora, ed. 2, vol. i. p. 24.

Root small. *Stem* smooth, about twelve inches high. *Leaves* narrow, the lower ones mostly entire, the upper toothed, cut, or pectinated at the base. *Flowers* light blue or flesh-coloured, small, *bracteas* small, narrow, few, and not arranged in the form of an involucre, as in the last species. *Fruit* obpyriform, the back convex part is the perfect cell, containing a single seed, terminated in a larger and broader tooth, frequently at the base, on each side is a smaller one, the plane front has two projecting ribs, the shrunk abortive cells, each terminating in a small subulate tooth, and between them is also another tooth about the same size.

Habitat.—In corn-fields and cultivated grounds, but not common. About Mansfield and Pleasly, Nottinghamshire, Cambridgeshire, Cornwall, Essex, Edinburgh, and North Wales.—β. Hedge-banks, near Halesworth, Suffolk.—λ. Ormeshead, Caernarvonshire.

Annual; flowering during the summer months.

4. *F. Auric'ula*, Gaud. (Fig. 53.) *sharp-fruited Corn-Salad*. Flowers corymbose, with a sessile flower in the division of the flower-stalks; capsule ovate, acuminate, somewhat inflated, slightly grooved in front, smooth, crowned with the single entire tooth of the calyx.

Hooker, British Flora, vol. i. p. 24.—*Valerianel'la Auric'ula*, De Candolle, Flore Francois, Supplement, p. 492.

Plant from twelve to eighteen inches high, nearly smooth. *Stem* ribbed, repeatedly forked above, forming a spreading corymbiferous *inflorescence*, bearing in the axis of the divisions a solitary sessile flower. *Flowers* numerous, small, pale blue. *Fruit* ovate, somewhat inflated, smooth, beautifully dotted, having three narrow ribs, and slightly grooved in front, crowned with a single entire, obtuse, concave tooth of the limb of the calyx, and sometimes two others, which are very small, generally obsolete. *Leaves* opposite, the lower entire spatulate, the upper toothed or pectinated at the base.

Habitat.—Lindulph, Cornwall—Rev. R. T. Brec; Hastings—Dr. Bromfield.

Annual; flowering in June and July.

Specimens and seeds of this newly discovered plant (as a native of this country) were also last autumn obligingly communicated by Mr Borrer, since which the seeds have been sown in a sheltered situation in the Sheffield Botanic Garden, and from plants thus produced our drawing was made. The fruit, as Dr. Hooker observes, is certainly considerably different from *F. dentata*.

GENUS III. CROCUS. *Crocus*.

Nat. Ord. IRIDÆÆ.

GEN. CHAR. *Perianth* divided into six equal coloured segments, its *tube* longer than the *limb*, and enveloped in two or more membranous *sheaths*. *Stigma* three-lobed, dilated, folded, and variously cut or jagged at the extremity.—The derivation of the word *Crocus* is variously given by authors; *κρόκος* of Theophrastus. Some derive it from *Coriscus*, a city and mountain of Silesia, and others from *κρόκισ*, or *κρόκη*, a *thread* or filament; from the appearance of the saffron of commerce, which is the dried stigmas of *C. sativus*.

1. *C. sativus*, Linn. (Fig. 54.) *Saffron Crocus*. *Stigma* in three deep linear notched lobes, drooping and protruding between the segments of the corolla.

English Flora, vol. i. p. 46.—Lindley, Synopsis, p. 255.—Hooker, British Flora, vol. i. p. 24.—*C. autumnalis*, English Botany, t. 343.

Bulbs solid, depressed, enveloped in thin brown reticulated fibro-membranous coats. *Leaves* linear radical, longer than the flower, and enveloped at the base with a thin white membranous sheath, dark green above, with a white stripe running along the middle, paler beneath. *Flower* of a lilac or violet colour. *Stamens* shorter than the corolla, but the *style* about the same length. The *stigma* of a rich orange colour, odorous.

Habitat.—In meadows in Cambridgeshire and Essex, probably naturalised.

Perennial; flowering in September.

The stigma of this species is alone fragrant, and is the saffron of the shops, for the purpose of procuring which, the plant is extensively cultivated at Saffron-Walden and Stapleford, Essex. The flowers are gathered early in the morning, and the stigmas, with a portion of the style, carefully picked out of the flowers; they are then dried upon a kiln, under a pressure, to form *cake saffron*,—or loosely, which is then called *hay saffron*. The virtue of saffron appears to reside in a peculiar extractive principle called “polychroite.” Saffron was considered by the ancients as a remedy of great efficacy, but in modern practice it is found to possess few sensible qualities, beyond the orange colour which it imparts to water, alcohol, &c.

2. *C. ver'nus*, Willd. (Fig. 55.) *purple Spring Crocus*. *Stigma* erect within the flower, divided into three jagged wedge-shaped lobes; mouth of the tube of the corolla hairy.

English Botany, t. 344.—English Flora, vol. i. p. 46.—Lindley, Synopsis, p. 255.—Hooker, British Flora, vol. i. p. 24.

Distinguished from the last species by its shorter and broader leaves, the erect pale inodorous stigma remaining within the flower, its wedge-shaped segments, and the tube of the corolla thickly set at its mouth with pellucid hairs. Their times of flowering are also different.

Habitat.—Meadows between Nottingham Castle and the river Trent, abundant.

Perennial; flowering in March.

Long since naturalised in the above station, where it has increased to so great an extent, that its beautiful flowers, the harbingers of Spring, cover an extent of a great number of acres with a rich mantle of a bright purple colour.

3. *C. min'imus*, Red. (Fig. 56.) *least purple Crocus*. Stigma erect within the flower, longer than the stamens, and divided into three obtuse lobes; bulb clothed with a subcoriaceous coat, separating in rings at the base.

Hooker, in Botanic Magazine, t. 2991.—British Flora, vol. i. p. 24.—*C. præ'cox*, English Botany, Supplement, t. 2645.—*C. reticula'tus*, English Flora, vol. i. p. 47.

A small but distinct species, although without much doubt an out-cast of the garden. *Corolla* white, sometimes pale blue or yellow, the three outer segments marked with three longitudinal feathery stripes of a purple colour.

Habitat.—In Sir H. Bunbury's Park, at Barton Hall, Suffolk.

Perennial; flowering in March.

4. *C. au'reus*, Smith, (Fig. 57.) *golden Crocus*. Stigma shorter than the stamens; bulbs clothed with a thick smooth compact fibrous coat.

Hooker, in Botanic Magazine, t. 2986.—British Flora, vol. i. p. 25.—English Botany, Supplement, t. 2646.—*C. lu'tens*, Lindley, Synopsis, note, p. 255.

Flowers small, a golden yellow colour, two or more springing from one bulb. *Leaves* shorter than the tube, but when the corolla has decayed, they become much longer. It is equally probable that this, with the last species, has emanated from a garden.

Habitat.—With the preceding, in Sir H. Bunbury's Park, at Barton Hall, Suffolk.

Perennial; flowering in March.

5. *C. nudiflo'rus*, Sm. (Fig. 58.) *naked-flowering Crocus*. Stigma erect within the flower, in three deeply lacinated tufted lobes about the same height as the stamens. The flowers appear without leaves.

English Botany, t. 491.—English Flora, vol. i. p. 47.—Lindley, Synopsis, p. 255.—Hooker, British Flora, vol. i. p. 25.

Root small, clothed with loose reticulated fibrous membranes, and sending out offsets or scaly runners. Lower part of the *stem* mostly swelling, and, as well as the tube, enveloped in their membranous sheaths. *Flowers* purple. *Leaves* not appearing until some time after the flowers have disappeared, long, flat, pale coloured.



56.

Crocus minimus.



57.

Crocus aureus



58.

Crocus nudiflorus.



59.

Crocus speciosus.



60

Trichonema Columnæ.



61.

Iris Pseud-acorus.

Habitat.—In the meadows between Nottingham Castle and the river Trent. Plentiful, though not in so great profusion as *C. vernus*.

Perennial; flowering in October.

It is remarkable that the same fertile meadows should in early spring be adorned with the rich flowers of *C. vernus*, and in the decline of autumn with the not less beautiful *C. nudiflorus*.

6. *C. speciosus*, (Fig. 59.) *showy autumnal Crocus*. Stigma erect within the flower, in three lacinated tufted lobes, longer than the stamens. The flowers appear without leaves.

English Botany, Supplement, t. 2752.—Hooker, British Flora, vol. i. p. 25.

Similar to the last species, except in the somewhat longer and less distinctly three-lobed stigma. Characters scarcely sufficiently permanent to constitute a specific difference.

Habitat.—In meadows about Warrington and Halifax, probably naturalised.

Perennial; flowering in October.

The humble, grass-like foliage—the white, gold, or purple-coloured flowers—together with the extreme hardness of the bulbs, has rendered the Crocus an object of peculiar interest to lovers of flowers, since, and probably long before, the time of Edward the Third. This beautiful flower would appear to have attracted especial notice when Floriculture was yet in its infancy; and more than two hundred years ago, Parkinson enumerated no less than thirty-one kinds as having “been carefully sought out and preserved by divers to furnish a garden of denty curiosity.” The fact that so great a number of kinds were cultivated at so remote a period, greatly strengthens the probability that the Crocus is not an aboriginal native of Great Britain; and the same author remarks,—“The several places of these saffron flowers have been found out, some in one country and some in another, as the small purple and white and striped white in Spain,—the yellow in Mesia, about Belgrade,—the great purple in Italy; and now by such friends’ helps as have sent them, they prosper as well in our gardens as in their natural places: yet I must give you this to understand, that some of these formerly expressed have been raised up unto us by the sowing of their seed:”—from which it would appear, that by seminal offspring varieties were then raised, and by this means the roots might be increased to a very great extent; considered with this, the almost indestructibility and tenacity of life evinced by the Crocus, even under the most unfavourable circumstances,—the facility with which birds might carry either seeds or bulbs to a distance,—and whatever satisfaction it would afford in being able to prove that these beautiful flowers are really “anchent Britains,” it is far more likely they are but naturalised natives.

As a garden flower, the Crocus is still somewhat in repute; but that

particular care and attention which would seem at one time to have been bestowed upon it, has long since been given to more successful rivals, such as Tulips, Pinks, Carnations, and many others; thus illustrating the lines of the immortal Shakspeare, that "Novelty is only in request: and it is dangerous to be aged in any kind of course." The above remarks apply to Great Britain only: on the continent, but more especially in Holland, the Crocus is still cultivated with much care, and many new varieties raised. In this country, it is perhaps the most frequently met with decorating cottage gardens often in the most remote situations; and although the late Mr. Haworth, of Norwich, devoted much time and care to the cultivation of this genus, during which time many new and beautiful varieties were brought into existence,—and Mr. Sabine, while connected with the London Horticultural Gardens at Chiswick, collected many interesting and curious varieties,—yet with these and a very few other exceptions, it is now nearly neglected as a florists' flower. By some it is thought that *C. sativus* and *C. vernus* are the parents of many, or most, of the varieties now in cultivation: both produce and perfect their seeds freely, especially the latter, from which many beautiful kinds have been raised.

The cultivation of the Crocus is amongst the most simple operations of gardening, for, while they may be grown to the highest state of perfection in a rich yellow sandy loam, they will scarcely grow less luxuriant in the most sterile soil; and the prevalent opinion that if the roots are not taken up and replanted once every three or four years, they would gradually rise to the surface of the ground, and be lost, is not substantially correct; for although in some instances this might be the case, it does appear from observation, that many years would elapse before such a result could generally take place.

In this genus the mode of semination is extremely interesting, and can be seen to great advantage in *C. nudiflora*. During the time it is in flower, the three-celled *ovarium* is seated on the summit of the bulb, and towards the maturity of the seeds, they are raised on a long slender peduncle, and perfected at the surface of the ground.

GENUS IV. TRICHONEMA. *Trichonema*.

Nat. Ord. IRID'Æ.

GEN. CHAR. *Perianth* divided into six deep equal segments; its *tube* shorter than the *limb*, and enveloped in a *sheath* longer than the tube. *Filaments* short, hairy. *Stigma* very slender, deeply divided, its lobes bipartite, spreading. *Capsule* three-celled. *Seed* globose and numerous.—Name from $\theta\rho\iota\chi\acute{o}\varsigma$, *pilus*, a hair, and $\nu\eta\mu\alpha$, a filament, or thread; in reference to the pilose or pubescent filaments.

1. *T. Colum'nae*, (Fig. 60.) *Columna's Trichonema*. Scape single-flowered, drooping, shorter than the leaves, which are radical, linear, furrowed and reflexed.

Lindley, Synopsis, p. 255.—Hooker, British Flora, vol. i. p. 25.—*Trichone'ma Bulboco'dium*, English Flora, vol. i. p. 48.—*Ix'ia Bulboco'dium*, English Botany, t. 2549.

Bulb ovate, solid, mostly surrounded with torn membranous sheaths. *Leaves* numerous, from three to five inches long, spreading. *Scapes* several, sometimes branched. *Flowers* mostly blue or purple, occasionally white or yellow. *Spatha* of two lobes, longer than the tube of the *corolla*. *Stamens* longer than the stigmas.

Habitat.—Rare. On dry grassy hillocks in Guernsey, and the Warren, Dawlish, Devonshire.

Perennial; flowering in March and April.

It is frequently cultivated in the flower-garden, and thrives best on a sandy soil; the flowers are more numerous, and larger, than when grown in an uncultivated state.

GENUS V. IRIS. *Iris*, or *Flower-de-Luce*.

Nat. Ord. IRID'ÆÆ.

GEN. CHAR. *Perianth* single, of six unequal segments, three alternate ones larger and reflexed. *Stigmas* three, resembling petals, and forming a cover to the oblong *anthers*.—Name from *Iris*, a rainbow; in allusion to the gay and varied colours of the flowers.

1. *I. Pseudac'orus*, (Fig. 61.) *yellow Water Iris*, or *Corn-flag*. *Perianth* beardless, the three inner segments erect, smaller than the stigmas, leaves sword-shaped.

English Botany, t. 578.—English Flora, vol. i. p. 49.—Lindley, Synopsis, p. 255.—Hooker, British Flora, vol. i. p. 26.

β. *citrin'a*; "flowers smaller, paler coloured, segments of the *perianth* narrower, the inner ones more acute, stem taller."—*Iris Pseud-acorus*, Botanic Magazine, t. 2239.—Hooker, British Flora, vol. i. p. 26.

Rhizoma large, fleshy, laying prostrate on the surface of the ground, simple or variously branched, with numerous small fibres on the under side. *Stem* from two to four feet high, round, smooth, *Leaves* erect, sword-shaped, ribbed, of a glaucous hue. *Flowers* from three to six, large, handsome, lemon-coloured, streaked with purple lines, the *outer segments* of the *perianth* much the largest, broad, rounded, reflexed, the *inner* small, narrow-pointed, erect, *smaller* than the dilated petal-like *stigmas*, which are cut or fringed, and arched over the *anthers*. *Bractæas* pale, thin, membranous at the edges. *Capsule* angular, three-celled, three-valved. *Seed* numerous, globular, or angular.

Habitat.—Common on the margin of rivers, drains, wet meadows, woods, &c. β . “Found in Ayrshire by Mr. James Smith, of Ayr.”

Perennial; flowering in July.

The fleshy rhizoma of this plant was formerly used medicinally; it is scentless, but its juice is very bitter and acrid, producing great heat and a copious discharge when applied to the lining membrane of the nose or mouth; hence it is used as an errhine and sialagogue, and will sometimes relieve the tooth-ache. The quantity of feculent matter which it contains, combined with its acidity, has caused it to be used as a cathartic. By drying, it loses these qualities, and becomes astringent, and is then used in the preparation of black dyes, ink, &c. *Orris root*, the dried rhizoma of *I. florenti'na*, is known by its agreeable violet odour, and is used in the making of tooth and hair powders. The seed of *I. pseudacorus* are said, when roasted, to form an excellent substitute for coffee.

2. *I. fetidis'sima*, (Fig. 62.) *stinking Iris*, or *Gladwyn*. Perianth beardless, the three inner segments spreading, about the size of the stigmas, stem with one angle, leaves sword-shaped.

English Botany, t. 596.—English Flora, vol. i. p. 50.—Lindley, Synopsis, p. 255.—Hooker, British Flora, vol. i. p. 26.

Stem about two feet high. *Leaves* sword-shaped, emitting when bruised a peculiar odour, which would appear from its specific name to have been particularly disagreeable to some persons, but is compared by others to the smell of roast beef or mutton, from whence it has derived the common English name of *roast-beef plant*. *Flowers* a dull purple colour, streaked with dark veins, much smaller than the last species. *Capsule* three-celled. *Seed* numerous, globose, a deep orange colour, smooth.

Habitat.—In woods, under hedges, and in pastures; common in the southern parts of England. “In Devonshire it is so frequent, that you can hardly avoid walking among it when herborising, and being annoyed by the smell.” Rare elsewhere, and not found in a wild state in Scotland.

Perennial; flowering in May.

When the capsules are ripe, the valves burst open, and expose the bright orange seeds, which remain attached to them for a considerable time after, and have a singularly conspicuous, but beautiful appearance.

GENUS VI. CYPERUS. *Cyperus*, or *Galingale*.

Nat. Ord. CYPERACEÆ.

GEN. CHAR. *Flowers* in spikes, glumaceous. *Spikelets* two ranked, imbricated, many flowered. *Glumes* of one keeled valve, gene-



62. *Iris foetidissima.*



63. *Cyperus longus.*



64. *Cyperus fuscus.*



65. *Schænus nigricans.*



66. *Rhynchospora alba.*



67. *Rhynchospora fusca.*

rally fertile, equal. *Bristles* none. *Style* simple, deciduous.—Name from *κυπαρος*, a little round vessel, which the roots of some species are said to resemble.

1. *C. lon'gus*, (Fig. 63.) *sweet Cyperus*, or *English Galingale*. Umbels doubly compound, general involucre of several very long leafy bracteas, partial ones small, spikelets linear-lanceolate, erect, spreading, stem triangular.

English Botany, t. 1209.—English Flora, vol. i. p. 54.—Lindley, Synopsis, p. 279.—Hooker, British Flora, vol. i. p. 26.

Root creeping, twisted, of a brown colour, very aromatic, and asstringent. *Stem* triangular, from two to three feet high, slender, erect, leafy. *Leaves* long, keeled, nearly flat, the edges smooth, a bright green colour. *Umbel* doubly compound, its partial stalks triangular, and surrounded at the base with close membranous sheaths. *Spikelets* narrow, from five to ten together, compressed, of numerous shining brown, green-keeled *glumes*, arranged in two opposite closely imbricated ranks. *Seed* pointed. *Stigmas* three.

Habitat.—Very rare. Marsh, near St. David's, and Walton-in-Gordon, Somersetshire; near Seabrook, Kent; Boyton, Wilts; Guernsey.

Perennial; flowering in July.

2. *C. fus'cus*, (Fig. 64.) *brown Cyperus*. Umbels compound, involucre of three unequal leafy bracteas, spikelets linear-lanceolate, glumes spreading, stem triangular.

English Botany, Supplement, t. 2626.—English Flora, vol. i. p. 54.—Lindley, Synopsis, p. 279.—Hooker, British Flora, vol. i. p. 26.

Root fibrous. *Stems* several, from four to six inches long, smooth, spreading, seldom erect, leafy at the base. *Leaves* narrow, radical, sheathing at the base, shorter than the stems, acuminate, gracefully curved. The longest leaf of the *involucre* often half as long as the stem. *Umbel* of about six spikelets, forming a compound terminal cluster. *Seed* triangular, with a simple beak. *Stigmas* three, as long as the filaments.

Habitat.—Very rare. In marshy meadows, near Little Chelsea.

Annual; flowering in August and September.

The genus *Cyperus* is very large, containing about two hundred and forty known species. Most of them are natives of the tropics, and gradually diminish in number towards the colder regions. The two here figured only are known as natives of England, and these found in its southern counties, while not any are known in Scotland. Few of this extensive genus are of much value, either as food or medicine. The roots of *Cyperus longus* have a pleasant odour similar to Violets, are bitter, and have been esteemed as tonics and stomachics. *C. esculentus* bears a number of small tubers upon its subterraneous stems,

which are eaten in Egypt and other places, and, when roasted, used as a substitute for coffee. *C. hy'dra*, or *nut-grass*, is said to be exceedingly troublesome in the sugar plantations, as it overruns them, and renders the canes barren. It is stated on the authority of Major-Gen. Hardwick, that the tubers of *C. rotunda'tus* are given with success by the Hindoo practitioners in cases of cholera. Some few other species are used; but perhaps the greatest interest attached to the genus is from the classical associations which are connected with the Egyptian *papyrus*—*C. pap'yrus*, or *Pap'yrus an'tiquorum* of some authors; from which the ancients chiefly manufactured their paper, ropes, and cables, and also their boats, from the accounts of Pliny. The roots were chewed for the pleasant juice which they contain, and the roasted stalks were esteemed for their pulpy matter.

GENUS VII. SCHÆ'NUS. *Bog-rush*.

Nat. Ord. CY'PERACEÆ.

GEN. CHAR. *Spikelets* one to three-flowered. *Glumes* two ranked, the outer ones smaller, barren. *Bristles* very small, or none. *Style* jointed, deciduous.—Name from *κοινός* or *σχοινός*, a *rope* or *cord*; because from plants of this tribe a kind of cable and cordage was made.

1. *S. ni'gricans*, (Fig. 65.) *black Bog-rush*. *Spikelets* several, collected into a compact terminal head, involucre of two leaves, the outer one terminating in an awl-shaped point, longer than the head, stem round, and leafless.

English Botany, t. 1121.—English Flora, vol. i. p. 52.—Lindley, Synopsis, p. 280.—Hooker, British Flora, vol. i. p. 27.

Root long, black, and exceedingly tough. *Stem* from six to twelve inches high, erect, round, smooth, simple, enveloped at the base by the dark and shining sheaths of the *leaves*, which are narrow, setaceous, rigid, somewhat rough, shorter than the stem. *Head* of flowers terminal. *Spikelets* crowded. *Glumes* a dark brown, almost black. *Style* jointed, darker than the germen. *Stigmas* three. *Bristles*, when present, are small, brown, and spiny.

Habitat.—On turfy waste land. "Rare in Scotland, except on the west coast."

Perennial; flowering in June and July.

GENUS VIII. RHYNCH'OSPORA. *Beak-rush*.

Nat. Ord. CY'PERACEÆ.

GEN. CHAR. *Spikelets* few flowered. *Glumes* of one valve, imbricated on all sides, the outer ones smaller, barren. *Bristles* various in

number, spiny, and shorter than the glumes. *Style* bifid, dilated at the base, more or less articulated, persistent, and crowning the fruit.—Name from *ρυγχος*, a *beak*, and *σπορον*, a *seed*; on account of the beaked appearance of the seed, from the persistent dilated base of the style.

1. *R. al'ba*, (Fig. 66.) *white Beak-rush*. Spikelets in compact fasciculated clusters, nearly as long as the bracteas, leaves narrow, channelled, linear, tapering.

English Flora, vol. i. p. 52.—Lindley, Synopsis, p. 279.—Hooker, British Flora, vol. i. p. 27.—*Schæ'nus al'bus*, English Botany, t. 985.

Root fibrous, somewhat creeping, tough. *Stem* four to twelve inches high, slender, erect, three-cornered, and, as well as the whole plant, smooth. *Leaves* erect, longer than the partial flower-stalks, keeled, ribbed, especially at the base, sheathing the stem. *Partial flower-stalks* and leaves of the stem frequently unilateral. *Spikelets* oblong, almost white, becoming brown with age, generally two-flowered. *Clusters* nearly level at the top, mostly shorter than the bracteas. *Glumes* long, acute, slightly keeled, the outer ones smaller, and barren. *Stamens* two. *Style* persistent, bifid at the extremity, and much dilated at the base, but not so broad as the fruit, which is obovate, compressed, margined, tapering at the base, and surrounded with six or more spiny bristles, longer than itself.

Habitat.—Boggy situation, not uncommon in mountainous districts, but rare elsewhere.

Perennial; flowering in July and August.

A very pretty Rush, growing in tufts, which are rendered very conspicuous by their numerous white heads of flowers amidst the narrow green leaves, and readily distinguished from the following species, which has oval heads of flowers of a rich glossy brown colour.

2. *R. fus'ca*, (Fig. 67.) *brown Beak-rush*. Spikelets in an oval head, much shorter than the bracteas, leaves setaceous.

English Flora, vol. i. p. 53.—Lindley, Synopsis, p. 279.—Hooker, British Flora, vol. i. p. 27.—*Schæ'nus fus'cus*, English Botany, t. 1575.

Plant smaller, or about the same size as the last. *Leaves* narrower, channelled at the base, sheaths shorter. Heads of flowers larger, oval, the bracteas considerably longer. *Spikelets* larger. *Glumes* broader, shining, of a rich reddish-brown colour. *Stamens* three. *Style* similar to the last, as well as the fruit; but the stigmas protrude further beyond the glumes. *Bristles* various: Smith and Sturm describe only three in each flower—Hooker six, which we also find in the specimens examined.

Habitat.—Rare. Principally found in bogs in the south-west of England, and near Killarney, Ireland.

Perennial; flowering in July and August.

GENUS IX. SCIR'PUS. *Club-rush.*

Nat. Ord. CY'PERACEÆ.

GEN. CHAR. *Glumes* of one valve, imbricated on all sides, the outer ones sometimes barren. *Bristles* sometimes wanting. *Style* simple, deciduous. *Fruit* terminating in a mucro.—Name of doubtful origin. According to Theis, it is from *Cirs*, in Celtic, which makes *Cors* in the plural,—whence *chorda* in Latin, and *cord* in English; the stems having been formerly employed for the purpose of making cords, as those of *Schænus*.

1. *S. lacus'tris*, (Fig. 68.) *Lake Club-rush*, or *Bull-rush*. Spikelets ovate, in compound lateral umbels, stem round, smooth, without or but few leaves at the base.

English Botany, t. 666.—English Flora, vol. i. p. 56.—Lindley, Synopsis, p. 281.—Hooker, British Flora, vol. i. p. 27.

β. *glau'cus*, smaller, glaucous, umbels more compact, less compound, Hooker, Flora Scot. vol. i. p. 18.—*Scir'pus glau'cus*, English Botany, t. 2312.—English Flora, vol. i. p. 58.

Roots long, as well as the thick submerged stems, which frequently spread a considerable distance under water. *Stem* three, six or eight feet high, erect, simple, smooth, and terminating above the inflorescence in a long triangular point, naked, except at the base, which is surrounded with pale sheaths, sometimes terminating in a short leafy expansion. *Umbels* very variable in size, and in the number of the spikelets, *universal involucre* variable, of a few thin membranous bracteas, the *partial* ones much smaller and shorter. *Pedicels* of the partial umbels compressed or three-cornered, rough at the edges, of various lengths. *Spikelets* ovate, sometimes nearly sessile. *Glumes* ovate, fringed, of a rusty brown colour, frequently notched at the end, keel terminating in a point. *Stamens* equal in length to the two or three-cleft *stigma*. *Fruit* obovate, flat on one side, convex on the other. *Bristles* from four to six. The glumes of β. *glau'cus* are generally less fringed and dotted with purplish-coloured spots, but these vary as well as other characters, so as to render its specific distinction untenable, notwithstanding the high authority of Sir J. E. Smith, who states it to be “a very distinct species.”

Habitat.—In clear drains, ditches, and margins of lakes; common.—β. In similar situations, but not so common.

Perennial; flowering in July and August.

The stems, under the name of Rushes, are used to a considerable extent for a variety of domestic purposes, such as thatching for cottages, matting for floors, but most extensively in the manufacturing of rush-bottomed chairs, and by coopers for making tight the spaces between the staves of casks, &c. They, as well as other of the Scirpuses, are eaten with avidity by cattle.



68.

Scirpus lacustris.



69.

Scirpus Holoschaenus.



70.

Scirpus setaceus.



71.

Scirpus Savii.



72.

Scirpus triqueter.



73.

Scirpus maritimus.

2. *S. Holoschæ'nus*, Linn. (Fig. 69.) *round cluster-headed Club-rush*. Spikelets in compact globular stalked or sessile lateral heads, bristles none, stem erect, round, and smooth, leaves subulate channelled.

English Botany, t. 1612.—English Flora, vol. i. p. 58.—Hooker, British Flora, vol. i. p. 28.—*Holschæ'nus vulga'ris*, Lindley, Synopsis, p. 283.

Root in dense brown tufts. *Stem* two or three feet high, erect, round, smooth, enveloped at the base with membranous pointed sheaths. *Leaves* narrow, short, acute, and channelled. Heads of *flowers* very various in number, stalked or sessile, generally both on the same plant. *Glumes* obovate, keeled, pointed, and fringed, of an opaque brown colour. *Stamens* as long or longer than the three-cleft style. *Fruit* small, without bristles.

Habitat.—Sandy sea-shores of the southern counties,—Devonshire, Dorsetshire, Hampshire, Somersetshire, &c. Very rare.

Perennial ; flowering in September.

3. *S. seta'ceus*, Linn. (Fig. 70.) *bristle-stalked Club-rush*. Spikelets terminal, one or two, rarely more, stem very slender, compressed, terminating in a leafy bractea, elongated beyond the spikelets, fruit ovate, ribbed, and marked with transverse furrows, without bristles at the base.

English Botany, t. 1693.—English Flora, vol. i. p. 59.—Hooker, British Flora, vol. i. p. 28.—*Isole'pis seta'cea*, Lindley, Synopsis, p. 283.

Roots long and fibrous. *Stem* from two to six inches high, very slender, compressed, smooth, striated, bearing one, two, or sometimes three spikelets at its extremity, and two or three leaves at the base. *Bractea* sometimes two, but generally only one, which is an apparent continuation of the stem, leafy, dilated at the base, with membranous edges. *Leaves* numerous, bristle-shaped, striated, sheathing at the base, and surrounded with a number of pinkish scales. *Spikelets* ovate. *Glumes* nearly round, pinkish brown, margins green, as well as the keel. *Stamens* two, about as long as the style. *Stigmas* three. *Fruit* slightly pointed, ovate, ribbed, and beautifully marked with transverse furrows. *Bristles* none.

Habitat.—Common in moist places, in sandy or gravelly situations, especially in an elevated or hilly country.

Annual ; flowering in July and August.

4. *S. Sa'vii*, Spreng. (Fig. 71.) *Savi's Club-rush*. Spikelets sessile, terminal, from one to three, involucre of two unequal leaves, longer than the spikelets, stem round, branched, and leafy below, fruit subglobose, indistinctly three-angled, roughish.

Hooker, in English Botany, Supplement, t. 2782.—British Flora, vol. i. p. 28.

β. monosta'chys; "spikelets solitary, with a shorter involucrel bractea."

Root fibrous, with creeping underground stems. *Stems* from eight to twelve inches high, erect, branched near the base. *Leaves* slender, setaceous, unequal in length, sheathing at the base. *Involucre* of two unequal opposite leaves, much longer than the *spikelets*, which are terminal, ovate, sessile, unequal in size. *Glumes* ovate acute, pale, striated and keeled. *Stamens* three. *Stigmas* three. *Fruit* globular, rough, with elevated points. *Bristles* none.

Habitat.—Bogs, rare. Renoyle, Ireland, Carreg, Ormen, Anglesea, Jersey, Devonshire. *β.* Cork.

Perennial; flowering in July.

5. *S. tri'queter*, Linn. (Fig. 72.) *triangular Club-rush*. Spikelets ovate sessile, and stalked, stem sharply triangular, terminating in a straight tapering point, fruit smooth.

English Botany, t. 1694.—English Flora, vol. i. p. 60.—Lindley, Synopsis, p. 281.—Hooker, British Flora, vol. i. p. 28.

Root entangled, forming thick matted tufts, and sending out creeping stems. *Stems* two to four feet high, erect, smooth, acutely triangular, naked upwards, leafy at the base. *Leaves* short, acute, with a long sheath at the base, and numerous imperfect ones surrounding it; frequently there is only one leaf. *Spikelets* ovate or oblong, some sessile, others on short triangular peduncles, growing from a lateral cleft on the side of the stem often several inches below the extremity, occasionally with a short lanceolate *bractea*. *Glumes* elliptical, closely and regularly imbricated, keeled, pointed, and beautifully fringed, of a reddish-brown colour. *Stamens* about the same length as the style. *Stigmas* two. *Bristles* three, rough. *Seed* roundish, smooth, shining.—*β.* of English Botany is said to be found near the sea, and to be more hard and rigid in its stem.

Habitat.—Banks and sides of rivers, near London; in the Thames at Lambeth, Battersea, &c.

Perennial; flowering in August.

6. *S. mari'timus*, Linn. (Fig. 73.) *salt-marsh Club-rush*. Spikelets oblong, terminal, sessile and stalked, involucre of several foliaceous leaflets, stem triangular, leafy, glumes notched, the keel terminating in a point between the segments of the notch.

English Botany, t. 542.—English Flora, vol. i. p. 62.—Lindley, Synopsis, p. 281.—Hooker, British Flora, vol. i. p. 29.

Root fibrous, sometimes with creeping stems, which swell into tubers. *Stem* from one to three feet high, tufted, triangular, frequently rough at the angles, leafy. *Leaves* frequently as long as the stem, linear, acuminate, flat, slightly keeled, roughish at the edges, and enveloping the stem with their striated sheaths, sometimes in luxuriant plants the

stem is leafy nearly to the top. *Involucre* of several foliaceous leaflets; occasionally there are only two, mostly longer than the spikelets. *Spikelets* large, ovate, or oblong, sometimes single, mostly several crowded, some of which are sessile, others on short stalks. *Glumes* a reddish-brown colour, covered with very short silky hairs, acutely notched at the end, with a mucro between the segments, which is the termination of the keel. *Stigmas* three. *Fruit* obovate, triangular, smooth. *Bristles* varying in number from two to six.

Habitat.—In salt-marshes, and the banks of rivers exposed to the tide, frequent.

Perennial; flowering in July and August.

The tubers are esculent, and Withering says they have been ground and used instead of flour in times of scarcity. Cattle eat the herbage with an apparent relish.

7. *S. carina'tus*, Linn. (Fig. 74.) *blunt-edged Club-rush*. Spikelets oblong, in a terminal cyme, longer than the involucre, stem naked, round at the base, bluntly three-cornered above, stigmas two.

English Botany, t. 1983.—English Flora, vol. i. p. 61.—Lindley, Synopsis, p. 281.—Hooker, British Flora, vol. i. p. 28.

Roots downy, submerged stems creeping, hard, and contracted. *Sheaths* several, leafless, enveloping the base of the stem, which is round, becoming triangular above, and terminating in an irregular cymose inflorescence. *Spikelets* oblong, of a rusty-brown colour, single or several clustered together. *Involucre* of one or more unequal leaves, the longest erect, shorter than the inflorescence. *Fruit* ovate, with several bristles at the base.

This species approaches *S. lacustris*, in the base of the stem being round, and in the similar arrangement of the inflorescence; and is allied to *S. triquetus*, by the upper part of the stem being triangular, and the style bifid.

Habitat.—Rare. By the side of the Thames about London, and the banks of the river Arun, in Sussex.

Perennial; flowering in August.

8. *S. sylvat'icus*, Linn. (Fig. 75.) *wood Club-rush*. Spikelets small, ovate, in a large repeatedly compound terminal cyme, involucre of several foliaceous leaflets, stem triangular, leafy.

English Botany, t. 919.—English Flora, vol. i. p. 62.—Lindley, Synopsis, p. 281.—Hooker, British Flora, vol. i. p. 29.

Root fibrous, with creeping underground stems. *Stem* triangular, from two to four feet high, leafy. *Leaves* numerous, long, flat, linear, somewhat rough at the edges and keel. *Spikelets* very numerous, small, ovate, greenish. *Glumes* small, entire, acute, keeled. *Involucre* of several long flat foliaceous leaflets. The terminal cymose inflorescence very large, repeatedly compound, its branches triangular, and

enveloped at the base in one or more membranous lanceolate sheathing bracteas. *Seed* small, light-coloured, triangular, terminating in a blunt dark-coloured point, and surrounded at the base with six or eight long rough bristles.

Habitat.—In moist, shady situations; not very common. In Kent, Norfolk, and about London. It is more plentiful in Scotland, particularly in the southern counties.

Perennial; flowering in June and July.

This is a very distinct, handsome, and graceful species.

GENUS X. ELEOCHARIS. BROWN. *Spike-rush*.

Nat. Ord. CYPERACEÆ.

GEN. CHAR. *Spike* terminal, solitary. *Glumes* of one valve, imbricated on all sides, mostly all fertile. *Bristles* four to twelve, finely toothed, rarely absent. *Style* dilated at the base, and jointed upon the germen. *Stigmas* two or three. *Fruit* lenticular or triangular, crowned by the indurated base of the style. *Stem* erect, simple, sheathed at the base.—Name from ἑλος, a marsh, and χαίρω, to delight; on account of the marshy situations in which they grow.

1. *E. palus'tris*, Br. (Fig. 76.) *creeping Spike-rush*. Stem round, emitting from its base long underground stems, stigmas two, fruit nearly plain on one side, convex on the other, shorter than the four bristles at its base.

English Flora, vol. i. p. 64.—Hooker, British Flora, vol. i. p. 30.—*Scir'pus palus'tris*, Linn. English Botany, t. 131.—*Helio'charis palus'tris*, Lindley, Synopsis, p. 280.

Root fibrous. *Underground stems* long, emitting roots at various intervals, and clusters of three or more erect, smooth, naked *flowering stems*, from six to eighteen inches high, tapering abruptly at the extremity, terminated by an ovate oblong acute *spike*, and surrounded at the base with close thin membranous sheaths, the lower external ones black and shining, the upper a reddish-purple colour. *Glumes* various in size, outer ones the smallest, keeled, brown, with a pale membranous edge. *Stigmas* two. *Fruit* pale, smooth, attenuated at the base, crowned by the dilated indurated base of the style, nearly plain on one side, convex on the other, shorter than the four spiny bristles, which are flattened and dilated at the base.

Habitat.—Common on the borders of lakes, ditches, and in wet marshy ground.

Perennial; flowering in June and July.

2. *E. multicau'lis*, Sm. (Fig. 77.) *many-stalked Spike-rush*. Stem



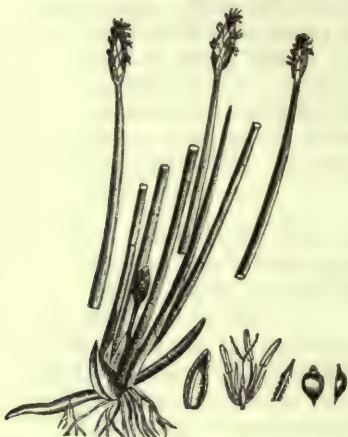
74.

Scirpus carinatus.



75.

Scirpus sylvaticus.



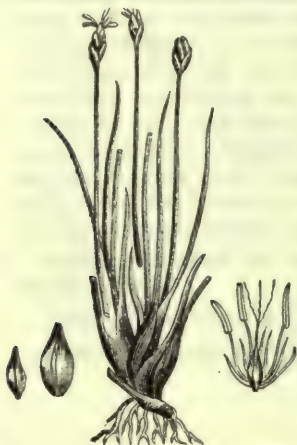
76.

Eleocharis palustris.



77.

Eleocharis multicaulis.



78.

Eleocharis pauciflora.



79.

Eleocharis acuminata.

round, with scarcely any underground stems, stigmas three, fruit bluntly triangular, longer than the six bristles at its base.

English Flora, vol. i. p. 64.—Hooker, British Flora, vol. i. p. 30.—*Scir'pus multicaul'is*, English Botany, t. 1187.—*Helio'charis multicaul'is*, Lindley, Synopsis, p. 280.

Roots long, fibrous, tufted, with scarcely any, or very short, underground stems. *Flowering stems* numerous, round, with a central pith, from eight to twelve inches high, contracted at the extremity, terminated by a slender oblong ovate *spike*, and surrounded at the base with close dull reddish-brown membranous *sheaths*. *Glumes* keeled, brown, with a membranous edge, outer ones the smallest. *Stigmas* three. *Fruit* smaller than the last species, brown, smooth, triangular, one side broader and flatter than the others, crowned by the hard dilated triangular base of the style, contracted at the base, and surrounded by six short narrow spiny *bristles*. This is nearly allied to the last species, for which it is probably frequently passed over, but is constant to the above characters, and the situation of its growth is also different.

Habitat.—On wet heathy places, common probably throughout the kingdom.

Perennial; flowering in July.

3. *E. pauciflo'ra*, Link. (Fig. 78.) *chocolate-headed Spike-rush*. Stem round, sheaths at the base close, leafless, spike ovate, few-flowered, outer glumes the largest obtuse, shorter than the spike, stigmas three, style deciduous.

Hooker, British Flora, vol. i. p. 30.—*Scir'pus pauciflorus*, English Botany, t. 1122.—English Flora, vol. i. p. 56.—*Helio'charis pauciflo'ra*, Lindley, Synopsis, p. 281.

Root fibrous, sometimes sending out jointed runners. *Flower stems* erect, slender, simple, smooth, enveloped at the base with tight membranous leafless sheaths, and surrounded with a few dark-brown scales; *barren stems* more or less numerous. *Spike* small, ovate, brown, of three or four flowers, the two outer *glumes* obtuse, half as long as the spike. *Fruit* triangular, pale, obtuse, terminated by the withered style, and surrounded at the base with about six *bristles*.

Habitat.—Bogs, moors, and heaths. Not uncommon in Scotland, less so in England, near Yarmouth, Norfolk; Anglesea, and Bangor, in Wales.

Perennial; flowering in July and August.

4. *E. caespito'sa*, Linn, (Fig. 79.) *scaly-stalked Spike-rush*. Stem round, or compressed, striated, leaves sheathed at the base, and invested with numerous scales, outer glumes the largest, as long as the spike, and terminated by long rigid points, stigmas three, style deciduous.

Hooker, British Flora, vol. i. p. 30.—*Scir'pus caespitosus*, English

Botany, t. 1029.—English Flora, vol. i. p. 55.—*Helio'charis caespito'sa*, Lindley, Synopsis, p. 281.

A small plant, growing in dense tufts. *Roots* numerous, tough, and wiry. *Stem* erect, slender, simple, striated, varying in height from two to ten inches, naked, except at the base, which is enveloped in two or three sheaths bearing subulate leaves, and surrounded with numerous smooth brown striated scales. *Spike* small, ovate, reddish-brown, two outer glumes largest, longer than the spike, mostly with a foliaceous apex, and generally fertile. *Fruit* triangular, pale yellow, terminating in a fine point, and surrounded at the base by six bristles, longer than itself. Dr. Hooker finds a *variety* upon Ben Lawers, with the two outer glumes an inch long, four times the length of the spike.

Habitat.—Common on moors and moist turfy situations.

Perennial; flowering in June and July.

This species grows most abundantly on moist barren moors in many parts of the country, and is fed upon by sheep, and “is called ‘Deer's Hair’ in the Highlands, and yields an abundant food to sheep on the mountains in spring.” *Hook*.

5. *E. acicula'ris*, Roem. and Sch. (Fig. 80.) *least Spike-rush*. *Stem* setaceous, grooved, compressed, sheaths at the base close, leafless, spike small, ovate, acute, glumes nearly equal, acuminate, stigmas three, fruit without bristles.

English Flora, vol. i. p. 65.—Hooker, British Flora, vol. i. p. 31.—*Scir'pus acicula'ris*, English Botany, t. 749.—*Helio'charis acicula'ris*, Lindley, Synopsis, p. 280.

A small, delicate, slender plant, growing in thick tufts. *Roots* long and fibrous, with slender runners. *Stem* from two to four inches high, compressed or four-sided. *Sheaths* at the base tight, reddish, leafless *barren stems* more numerous and shorter than the fertile ones, appearing like leaves. *Spike* very small, four to six flowered. *Glumes* nearly equal, keeled, brown, with a pale membranous edge; keel, especially of the outer ones, green. *Fruit* oblong, “pale yellow, beautifully impressed with dotted lines, tipped with the almost globose dark base of the *style*,” (*Hook*.) without bristles at the base, but the filaments are generally persistent, and might be mistaken for bristles.

Habitat.—Sandy borders of lakes, pools, and in marshy places, not unfrequent.

Perennial; flowering in July and August.

GENUS XI. ELIO'GITON. LINK. *Water-rush*.

Nat. Ord. CYPERACEÆ.

GEN. CHAR. *Spike* terminal. *Glumes* nearly equal, of one valve, imbricated on all sides, all fertile. *Bristles* absent. *Style* deci-

duous. *Fruit* tipped with a short point.—Name from ελος, a marsh, and γυτον, near or neighbour; on account of the species being found near or in the neighbourhood of marshes.

1. *E. flu'itans*, Link. (Fig. 81.) *floating Water-rush*. Stem branched, leafy, flower stems alternate, compressed, and naked, spike ovate, of few flowers, glumes obtuse.

Helio'giton flu'itans, Lindley, Synopsis, p. 283.—*Scir'pus flu'itans*, Linn. English Botany, t. 216.—English Flora, vol. i. p. 57.—*Eleo'charis flu'itans*, Hooker, British Flora, vol. i. p. 31.

Stems long, slender, zigzag, mostly floating on water, and emitting roots at intervals from the joints. *Flowering stems* and *branches* alternate, the former from two to four inches long, erect, frequently swelled in the middle, contracted at the apex, and bearing a small oval *spike*. The *leaves* long, narrow, keeled, sheathing at the base, and spreading at nearly right angles, especially in the upper part, the lower ones narrower, longer, floating on the water. *Glumes* nearly equal, obtuse, pale green. *Style* short. *Stigmas* two, long, feathery. *Fruit* pale, obovate, with three obtuse angles, tipped with the short narrow base of the style, and without bristles at the base.

Habitat.—In clear pools, ditches, and lakes, and in similar situations which are occasionally dried up; not common.

Perennial; flowering in June and July.

This species, although capable of existing several months in damp situations without water, is nevertheless mostly found floating on the surface of water on the margins of pools, &c. It is the only British species of the genus, and was arranged with Eleocharis, from which, however, it greatly differs in habit.

GENUS XII. BLYSMUS. PANZER. *Blysmus*.

Nat. Ord. CYPERACEÆ.

GEN. CHAR. *Spike* terminal, compressed. *Spikelets* bracteated, arranged in a distichous manner on a slightly zigzag rachis. *Glumes* of one valve, imbricated on all sides, outer ones the largest, barren. *Bristles* often absent. *Fruit* compressed, terminated by the tapering persistent *style*.—Name from βλυσμος, quod ex βλυζω, a source or spring, near which the species usually grow.

1. *B. compress'us*, Panz. (Fig. 82.) *broad-leaved Blysmus*. Bractea of the lower spikelet foliaceous, mostly longer than the spike, spikelets many-flowered, bristles six, leaves flat, linear, rough on the edges.

Lindley, Synopsis, p. 280.—Hooker, British Flora, vol. i. p. 29.—*Schæ'nus compress'us*, Linn. English Botany, t. 791.—*Scir'pus cari'cinus*, English Flora, vol. i. p. 59.

Root fibrous, tough, black, with creeping underground stems, of a brown colour. *Stem* simple, naked, from six to twelve inches high, striated, leafy below. *Leaves* flat, linear, above the length of the stem, slightly keeled, which, as well as the edges, are rough towards the end, and sheathing at the base. *Spike* terminal, compressed. *Spikelets* compressed, two ranked. *Glumes* shining, a light-brown colour, keeled and striated, the outer ones empty. *Fruit* pale, ovate, terminated by the tapering persistent darker style. *Stigmas* two. *Bristles* with reflexed spines, six, as long as the style.

Habitat.—Wet meadows and boggy situations; not uncommon.

Perennial; flowering in July.

2. *B. ru'fus*, Link. (Fig. 83.) *channel-leaved Blysmus*. Bractea of the lower spikelet membranous or leafy, spikelets few-flowered, bristles none, leaves narrow, channelled.

Lindley, Synopsis, p. 280.—Hooker, British Flora, vol. i. p. 29.—*Schæ'nus ru'fus*, English Botany, t. 1010.—*Scir'pus ru'fus*, English Flora, vol. i. p. 60.

A shorter and more rigid plant than the last species. *Roots* fibrous, tough, contorted and entangled with numerous creeping underground stems, emitting roots from the joints. *Stems* four to eight inches high, simple, smooth, naked above, leafy at the base. *Leaves* narrow, smooth, finely striated and channelled, sheathing at the base. *Spike* terminal, compressed. *Spikelets* ovate, two ranked, few flowered, *bractea* of the lower ones short and membranous, or long and foliaceous, sometimes much longer than the spike. *Glumes* shining, a dark-brown colour, mostly ribbed, the outer ones broader than the inner, and barren. *Fruit* pale, ovate, flattened on one side, convex on the other, narrow at the base, and terminated by the tapering persistent darker style. *Bristles* none, a character by which this species is readily distinguished from the last.

Habitat.—In marshy places, principally near the sea; most frequent in Scotland, and found "as far as Shetland"; abundant on the Isle of Arran. On the west coasts of England and Ireland, and in Wales.

Perennial; flowering in July.

GENUS XIII. ERIOPH'ORUM. LINN. *Cotton-grass*.

Nat. Ord. CY'PERACEÆ.

GEN. CHAR. *Spikes* terminal, solitary, or numerous. *Glumes* of one valve, imbricated on all sides, nearly equal. *Style* deciduous. *Stigmas* three. *Fruit* with very long silky hairs springing from the base.—Name from *εριον*, *wool*, and *φερω*, *to bear*, or *carry*; on account of the conspicuous woolly heads, or because the seeds are carried or borne on the wind, supported by their long woolly hairs.



80. *Eleocharis acicularis.*



81. *Eleocharis fluitans.*



82. *Blysmus compressus.*



83. *Blysmus rufus.*



84. *Eriophorum alpinum.*



85. *Eriophorum vaginatum.*

* *Spike solitary.*

1. *E. alpi'num*, (Fig. 84.) *alpine Cotton-grass*. Stem triangular, naked above, below enveloped in sheaths of various length, the upper ones bearing short leaves, spike small, oblongo-ovate, glumes strongly keeled.

English Botany, t. 311.—English Flora, vol. i. p. 67.—Lindley, Synopsis, p. 282.—Hooker, British Flora, vol. i. p. 31.

Root fibrous. *Underground stems* long and creeping, putting up rows of numerous *flowering stems*, which are from four to eight inches high, with three rough edges, scaly at the base, and enveloped in several striated smooth sheaths. *Leaves* very short, channelled, a little rough on the edges. *Spike* small, oblongo-ovate. *Glumes* few, brownish, with a strong green keel. *Hairs* few, erect, fine, white, and glossy.

Habitat.—Bogs in Scotland; "now probably extinct," Hook. Discovered by Mr. Brown and Mr. G. Don in the Moss of Restenet, three miles east of Forfar; "but that bog is drained, and the plant has disappeared."

Perennial; flowering in June.

Specimens, in an excellent state of preservation, of this very interesting plant, from which our drawing was made, are in the collection of the Sheffield Literary and Philosophical Society; they appear to have been sent by Mr. Brown to the late Mr. Salt, who has left this excellent and valuable collection, a memento of his indefatigable exertions in the science of Botany, which was pursued apart from the labours of business, and procured him the esteem of numerous scientific and learned men.

2. *E. vagina'tum*, (Fig. 85.) *hare's tail Cotton-grass*. Stem triangular above, with obtuse swelling leafless sheaths, below round, and the sheaths mostly terminating in long setaceous leaves, spike ovate, glumes thin, membranous.

English Botany, t. 783.—English Flora, vol. i. p. 66.—Lindley, Synopsis, p. 281.—Hooker, British Flora, vol. i. p. 31.—Sinclair, Gramineus Woburnensis, p. 358.

Root fibrous, tough, and wiry. *Stems* tufted, varying in height from six inches to two feet, jointed, and arising from each joint above are obtuse, inflated, striated sheaths, below it is enveloped in several sheaths terminating in erect setaceous *leaves* of various lengths. *Spike* early in the spring a silver grey, from the long, pointed, single ribbed, membranous *glumes*, which are beautifully contrasted by the large yellow *anthers*, and form at this early season of the year a pleasing object on the barren-looking situations of their growth. *Seed* obovate, triangular, with a short obtuse point, and copiously surrounded at the base with long, white, smooth *hairs*.

Habitat.—On wet barren moors, not uncommon. Plentiful in boggy situations, in Sherwood Forest, Nottinghamshire, and the moors of Derbyshire and Yorkshire, &c.; but most abundant in the mountainous parts of the north; less frequent in the south.

Perennial; flowering in March and April.

3. *E. capita'tum*, Host. (Fig. 86.) *round-headed Cotton-grass*. Stem round throughout, sheaths inflated, upper ones obtuse, the lower terminating in a narrow subulate leaf, spike nearly round.

English Botany, t. 2387.—English Flora, vol. i. p. 67.—Lindley, Synopsis, p. 282.—Hooker, British Flora, vol. i. p. 31.

Root fibrous, putting out more freely and longer underground stems than the last, "throwing up here and there tufts of shorter and thicker leaves"—(Smith.) *Stem* about a span high, entirely cylindrical, straight and stout. *Glumes* less delicate, the lower ones finely ribbed. *Hairs* much shorter than in the above species, as is also the whole plant, but of a stouter habit.

Habitat.—Found by Mr. G. Don by the side of a rivulet on Ben Lawers, Scotland, near to perpetual snow. Very rare.

Perennial; flowering in August.

**** Spikes several, pedunculated.**

4. *E. pubes'cens*, Sm. (Fig. 87.) *downy-stalked Cotton-grass*. Stem angular, leaves flat, lanceolate, triangular at the point, peduncles rough, hairs of the seed twice the length of the spike.

English Botany, t. 2633.—English Flora, vol. i. p. 69.—Lindley, Synopsis, p. 282.—Hooker, British Flora, vol. i. p. 32.

Roots strong, with creeping underground stems. *Stem* about eighteen inches high, triangular, smooth, leafy, especially below, and surrounded with numerous brown decayed leaves. *Leaves* sheathing, linear, shorter than the stem, triangular at the point, rough on the edges, especially towards the point, those of the stem shorter, with longer sheaths. The leaves and stem frequently assume a diseased appearance, are reddish, swelled, smooth and shining. *Bractees* leafy, about the length of the peduncles, dilated and brown below, triangular and rough at the point. *Spikes* ovate, from three to nine. *Peduncles* various in length, drooping, angular or compressed, roughish (not downy, as its name would imply), simple, or bearing several spikes. *Glumes* large, ovato-acuminate, single-ribbed, dark brown, pale at the edges and base. *Seeds* shining brown, obovate, with three unequal sides, terminating in an abrupt point, surrounded with white glossy hairs about twice as long as the spike.

Habitat.—Wet moors, not unfrequent.

Perennial; flowering in April and May.

It is stated in English Botany, that the roots are apparently



66.

Eriophorum capitatum.



87.

Eriophorum pubescens.



88.

Eriophorum polystachion.



89.

Eriophorum angustifolium.



90.

Eriophorum gracile.



91.

Nardus stricta.

creeping, but broken, in the specimen there figured and described; in reference to which, it may be worthy of remark, that in every instance in which we remember to have met with this species, its strong roots have been invariably intermixed with those of other plants, in such a manner as to render it difficult to obtain specimens with any portion of the roots remaining attached to them.

5. *E. polystachion*, Linn. (Fig. 88.) *broad-leaved Cotton-grass*. Stem round, leaves linear-lanceolate, flat, triangular at the point, peduncles smooth, hairs of the seed thrice the length of the spike.

English Botany, t. 563.—English Flora, vol. i. p. 68.—Lindley, Synopsis, p. 282.—Hooker, British Flora, vol. i. p. 32.

Root fibrous, in whorls towards the base of the stalks. *Stem* erect, from one to more than two feet high, smooth, round, striated, sometimes slightly angular at the top, jointed. *Leaves* numerous, broad, flat, slightly keeled, triangular at the point, rough on the edges and keel, especially towards the end, sheathing at the base, which is entire in this and the other species, and not slit on one side, as in the true grasses; the old withered leaves are generally very numerous around the base of the stem. *Bractees* leafy, dilated, and dark-brown at the base, with thin pale membranous edges. *Spikes* several, sessile, and stalked, sometimes the stalks bear several spikes. *Glumes* membranous, lanceolate, pale brown at the base. *Anthers* linear yellow. The spikes are pendulous when in seed, and the white glossy hairs about three times as long.

Habitat.—In wet boggy situations, Sherwood Forest, Nottinghamshire, Northamptonshire, Bedfordshire, Yorkshire, &c., probably not unfrequent.

Perennial; flowering in April and May.

We are unable at all times clearly to distinguish this species from either the preceding or following: from the former it is sometimes only to be known by the peduncles being smooth, not rough; and from the latter in the leaves being broader and less triangular, and the peduncles mostly bearing several spikes, a circumstance which we have never seen in it.

6. *E. angustifolium*, Roth. (Fig. 89.) *common Cotton-grass*. Stem nearly round, smooth, leaves linear, triangular, grooved towards the base, peduncles smooth, hairs of the seed about four times the length of the spike.

English Botany, t. 564.—English Flora, vol. i. p. 69.—Lindley, Synopsis, p. 282.—Hooker, British Flora, vol. i. p. 32.—Sinclair, Gramineus Woburnensis, p. 356.

Roots strong, with creeping underground stems. *Stems* from one to three feet high, erect, smooth, round below, mostly somewhat angular above. *Leaves* generally about the length of the stem, sometimes

longer, linear, triangular, channelled, smooth, round and sheathing at the base, rough towards the point. *Bracteas* two or three, about the length or longer than the peduncles, leafy, triangular, and rough above, dilated and sheathing at the base, where it is dark brown, with pale membranous edges. *Spikes* erect, or slightly drooping. *Peduncles* simple, various in length, smooth, striated. *Glumes* lanceolate, single-ribbed, membranous, brown with a pale margin. *Seed* shining brown, triangular, terminating in an obtuse point, surrounded at the base with an abundance of very long white shining hairs, forming large beautiful and conspicuous heads, highly ornamented during the summer months.

Habitat.—On moors, bogs, and wet meadows, common.

Perennial; flowering in April and May.

This is distinguished by the more upright stem; the spikes single on the peduncles; when in fruit not pendulous, but nearly erect, much larger, with the hairs longer; the leaves narrow, round at the base, not keeled, triangular above, and channelled on the upper side.

7. *E. gracile*, Roth. (Fig. 90.) slender Mountain Cotton-grass.

Stem erect, round, slightly angular above, smooth, leaves triangular, grooved, with a membranous ligula at the base, peduncles short, hairs of the seed twice the length of the spike, bractea shorter than the spikes.

English Botany, t. 2402.—English Flora, vol. i. p. 70.—Lindley, Synopsis, p. 282.—Hooker, British Flora, vol. i. p. 32.

Root fibrous, with slender underground stems, jointed, and enveloped with the rudiments of leaves, which are thick and fleshy. *Stem* slender, from six to eighteen inches high, striated, smooth, slightly angular. *Leaves* shorter than the flowering stem, (which mostly bears only one,) smooth, linear, triangular, keeled on the under side, channelled on the upper, striated, as are the sheaths at their base. *Ligula* lanceolate, entire. *Bractea* single, generally shorter than the spikes, leafy, striated, dilated and almost black at the base, with a pale thin margin. *Spikes* from two to five, sessile, or on short *peduncles*, erect, or slightly drooping. *Glumes* lanceolate, membranous, almost black, pale on the margins, upper ones single-ribbed, the outer with three. *Seed* pale brown, shining, elliptical, three-sided, obtuse at the apex, accompanied at the base with white shining hairs about twice as long as the spike.

This is the smallest and most slender of the many spiked Cotton-grasses.

Habitat.—On boggy mountainous situations.—Ben Lomond. *R. D.*—Ben Lawers and the Clove Mountains, Scotland, in a micaricous soil. *G. Don*.—Cwm Idwell, North Wales. *Mr. Wilson*.

Perennial; flowering in July.

The foliage of the Cotton-grasses is much relished by cattle in the early part of the season, but rejected by them when other and finer

grasses become more plentiful; nor is their produce or nutritive properties sufficiently great to render them worth cultivation. Attempts have been made to manufacture the long silky hairs into various articles of wearing apparel, but it is too brittle to be used for that purpose. In Lapland, Sweden, and poor mountainous countries, it is used for stuffing mattresses and pillows; but for this purpose it is also too brittle, and "there is a prevailing opinion of its not being wholesome to sleep on."

GENUS XIV. NARDUS. LINN. *Mat-grass.*

Nat. Ord. GRAMINÆÆ.

GEN. CHAR. *Glumes* wanting. *Glumelles* two unequal lanceolate valves, the outer one largest.—Name is derived from *ναρδος*, *nard*, or *spikenard*; *μυρον ναρδου*, "ointment (or balsam) of spikenard." (Mark, xiv. 3.) The plant here spoken of is thought to be the *Andropogon nardus*, the Indian Nard, or Spikenard, which yields an agreeable essential oil. *Nardus*, or *Nard*, is a name anciently applied to several plants, as *Nardus celtica* (*Valeriana celticæ*), *Nardus italica* (*Lavendula spicata*), *Nardus montana* (*Asarum europeum*). Its application to sweet-smelling herbs is celebrated by Milton in the following lines:—

"He now is come
Into the blissful field through groves of Myrrh,
And flow'ring odours, Cassia, *Nard*, and Balm."

It would be difficult to assign a reason for the application of this word to the present genus of plants, which are so utterly devoid of any properties analogous to those alluded to above.

1. *N. stric'ta*, Linn. (Fig. 91.) *Mat-grass*. Spikes slender, erect, florets all pointing in one direction, leaves setaceous, coarse, and rigid.

English Botany, t. 290.—English Flora, vol. i. p. 71.—Lindley, Synopsis, p. 296.—Hooker, British Flora, vol. i. p. 32.—Sinclair, Gramineus Woburnensis, p. 288.

Roots very strong, fibrous. *Stems* about a span high, numerous, erect, wiry, striated, mostly rough on the edges, with short stiff hairs, hard and rigid, as are the setaceous *leaves*, which are numerous, acutely pointed, sheathing at the base, striated, diverging abruptly from the stem, but curved upwards towards the extremity: *ligula* lanceolate. *Spike* long, slender, usually half the length of the stem, striated, toothed for the insertion of the florets, and marked with depressions, in which the florets are contained before flowering, at which time they are spread out. *Florets* arranged alternately in two rows, but all pointing in one direction. *Glumes* wanting, unless the border in front of the receptacle is

to be considered as one ; it is membranous, striated, and forms a short pointed sheath around the base of the florets ; in some specimens this process is so much elongated, that there would be no hesitation in calling it a valve, but in others it forms only a narrow border. *Glumelles* two unequal lanceolate valves, the external one largest, of a dark purplish colour, elongated into a rough rigid awn, coriaceous, and inclosing by its inflexed edges the *inner* valve, which is smaller, thin, membranous, and awnless. *Stamens* three, shorter than the glumelles. *Anthers* linear, yellow. *Style* short, simple, as well as the elongated feathery *stigmas*.

Habitat.—Moors, heaths, and waste, uncultivated, moist ground ; very common.

Perennial ; flowering in June and July.

This is one of the least valuable of our native grasses. Parkinson, in speaking of its uses in his “*Theatrum Botanicum*,” says it is used “both with us and in the low countries, for mats, hassocks, and divers other such like mean works, very serviceably.” It is not now used either for domestic or other purposes, and is equally worthless as a pasture grass. Linnæus observes, that sheep are not fond of it, and that goats and horses eat it ; but they never feed upon it from choice ; for, of so hard and wiry a nature is this grass, that in the ordinary way, observes Mr. Sinclair, in his excellent work the “*Hortus Gramineus Woburnensis*,” a scythe is passed amongst it without having the effect of dividing a single leaf ; and from this it may be conceived how ungrateful it must prove to the mouths of cattle. In dry barren places, the number and strength of its roots are greatly increased, and in such situations they penetrate the crevices of rocks to a great depth. On account of this property, it has been celebrated by Schrank as a safe support to the hands of the alpine botanist and naturalist, in precipitous situations, although it renders his path slippery.

ORDER II.

DIGYN'IA. 2 STYLES.

The whole of this order, together with the genus *Anthoxanthum* and *Nardus*, are true grasses, and constitute the natural order GRAMIN'EA.

No order of plants is more natural than this—none more extensive, or of so much importance to man, not only in furnishing him with the principal articles of his daily sustenance, but as constituting the chief support of the domestic animals ; indeed, the varied uses to which they are applied in the natural way, as well as in domestic economy, render

he grasses of more importance than any other tribe of the vegetable kingdom, both in an agricultural and commercial point of view.

Grasses, particularly by the young student of Botany, are usually ranked amongst the most difficult divisions of the Flora, and the collection and study of them are mostly deferred, or entirely neglected; but the parts by which they are characterised, though small, are, after a little practice, easily distinguished, and as readily and unerringly referred to their proper genus and species as any other tribe of plants. Indeed, no sooner does a person begin to take an interest in the investigation of this interesting tribe, than "the flower of the grass," to adopt a beautiful Scripture expression, will be found to possess peculiar attractions—"the grace of the fashion of it," becoming strikingly apparent, as the examination proceeds. Grasses differ widely, however, from other flowering plants, both in habit and structure (especially of the flower), which may render it desirable that some explanation of them should be given in this place.

The *roots* do not differ in any thing remarkable from those of other plants; they are fibrous, tufted, or widely spreading.

The *stems* are subterranean and superterranean, and are intercepted at various intervals by *joints*, which are formed by the interlacement of the fibres, and constitute an impervious diaphragm or solid knot (*nodus*). The *subterranean stems*, or *rhizoma*, are solid throughout, and the joints much closer together than in the upper part of the stem; from those joints, which lie mostly beneath the surface of the ground, roots are put out; and some species are remarkable from the number of *underground or creeping stems* (*soboles*) which they put forth; these creep horizontally below the surface of the ground, emitting at various intervals roots, leaves, and flowering stems from their joints. The *superterranean stems*, or *culms*, are cylindrical or fistular, but, when first developed, solid, like the rhizoma from whence they spring; but as their growth is much more rapid, they become hollow, and the joints further separated from each other. From each of these joints the *leaves* spring alternately, and envelope the culms by a *sheath*-like expansion at their base, which is slit open on one side; and frequently at the termination of the sheath, where it expands into the blade, there is a peculiar thin membranous or hairy process called a *ligula*.

The *inflorescence* is in the form either of a *spike*, a *raceme*, or *panicle*; each division of which is called a *spikelet* (*spicula*), or *locusta*.

The *spikelets* may be either one, two, or more flowered; sessile, or supported on a peduncle.

The *flowers* are mostly hermaphrodite (stamens and pistils in the same flower); sometimes monœcious (stamens and pistils in separate flowers on the same plant); or polygamous (stamens and pistils united in some flowers, separate in others, either on the same

plant, or on two or three different plants). The *floral coverings* are gradations of *bractea*, and are glumaceous, or chaffy; the pieces are called *glumes*, or *valves* (*valvula*). The external valves—*gluma* of Brown—are empty, and called by Linnæus, Smith, Hooker, and most botanists, *calyx*; it is the *gluma exterior* of others, the *tegmen* of Beauvois, the *peristachyum* of Panzer, the *lepicena* of Richard, and the *cætonium* of Trinius. Internal to these glumes there are one or more *florets*, the valves of which are mostly of a different texture; these are the *glumella* of De Candolle and Desvaux; the *corolla* of Linnæus, Smith, Hooker, and others; the *calyx* of Jussieu; the *perianthum* of Brown; the *gluma* of Richard; the *paleæ* of Beauvois and Lindley. Within these, and at the base of the germen, are found generally two, sometimes three, rarely one, small pale scales: the *glumellula* of Desvaux and De Candolle; the *nectary* of Linnæus and Smith; *squamula* of Jussieu, Brown, and others; *glumella* of Richard; *lodícula* of Beauvois; *corolla* of Micheli and Dumortier. From these differing, and indeed conflicting terms, it will be inferred how little comparatively is understood of the nature and organisation of these coverings; and until something more definite is known, it is better to call them what most obviously they are, viz. gradations of *bractea*. The external ones are here called *glumes*, the inner *glumelles*, and the innermost *glumellules*. The ribs of the glumes and glumelles are frequently elongated into an *awn*, *beard*, or *arista*, which is of greater or less length, hygrometrical, frequently jointed, twisted or feathery. The inner valve of the glumelles is in some species bifid at the extremity, the sides inflexed, and there are two ribs, one on each side: such a valve, Mr. Brown regards as composed of two confluent valves.

No plants are more widely distributed over the surface of the globe than the grasses, extending their range from the equator to the polar regions; and none are more varied in habit to adapt them to the various circumstances of soil, situation, and climate of the countries in which they grow. In most countries, grasses constitute the chief covering of the otherwise cheerless and desolate-looking earth; ornamenting and enriching the hills, the valleys, and the plains, with the liveliness of their lovely green, and affording abundance of food for multitudes of the animated creation. The CREATOR, ever solicitous for the provision and preservation of the various orders of creation, has displayed his wisdom in whatever department of nature we examine; but in the important tribe of grasses, this may be said to be most strikingly apparent, not only in having adapted them for every variety of climate and soil, but in wonderfully providing them with means to compensate for the various disadvantages in which they may be accidentally placed, and in overcoming and resisting injuries. For example: the stems or culms, which are mostly rejected by animals, and trodden down, might be thought to be destroyed; but they, in many

cases, put out roots from their nodi or joints, each of which becomes a distinct plant; so that, by means of these natural layers, the plants are greatly increased, and the pasture in which they happen to grow materially improved. On the other hand, the leaves and young stems being mostly preferred by grazing cattle, they are cropped close to the ground, and would appear irrecoverably injured; but it commonly happens that the more they are cropped, the more freely do they propagate themselves by offsets from their roots; this is a means of vast increase, resulting in the formation of large tufts, a property which renders many of the grasses so abundantly productive, and well suited for permanent pastures: it is by this means, that Wheat is often so productive; a single grain having been known to put up above an hundred culms or stems, each bearing from fifty to a hundred grains—a most astonishing increase! Again: many of the alpine grasses, or those growing on high exposed situations, where the heat of summer is not sufficient to ripen the seeds, do not all flower, but are in some instances viviparous; and even those which do produce flowers, are frequently found in that state. The roots of many species of grass are, when growing in a situation favoured with a plentiful supply of moisture, simply fibrous; but if the ground in which they vegetate becomes dry, or the plants are removed to a less humid situation, they form bulbs or tubers—a means admirably adapted by nature to lay in store a supply of nourishment for the plant in times of drought. Some grasses grow and flourish best in low swampy marshes, and even in water (but none are marine); others on particular soils, as sand, chalk, clay, &c.; or they prefer lower or more elevated situations,—as, for instance, *Poa aquatica*, *Calamagrostis arundinacea*, *Alopecurus geniculatus*, &c. are found in low swampy or watery places; while *Festuca ovina*, *Poa alpina*, *Aira alpina*, &c. occur on highlands or mountainous districts; and *Ammophila arundinacea*, *Phleum arenarium*, *Poa bulbosa*, &c. upon loose, sandy shores.

It might, *a priori*, be supposed that a tribe of plants so extensive in its characters, and distributed through every variety of climate, soil, and situation, would present a vast diversity in modification and habits; such, in fact, is found to be the case. The grasses are solitary, or social, multiplying and spreading to a great extent, erect or creeping, simple or branched, of almost every variety of height, from a few inches to upwards of two hundred feet,—assuming the port and character of trees, with foliage equally various, and roots not less so. Some species, from the fact of their producing large seeds containing a great portion of farinaceous matter, have been called *Cereal*, or *Corn-grasses*; and others, producing smaller seeds, but as furnishing a nutritious herbage for cattle, *pastoral* or *fodder grasses*.

The whole order, comprehending about two thousand species, with scarcely more than one exception, are wholesome; abounding in nutritious *sæculent* matter, and sugar;—indeed, the abundance of the latter

substance, in what is called from that circumstance the Sugar-cane has rendered the cultivation of this grass a matter of great importance, as from it we are so plentifully supplied with an article not only entering into the composition of numberless of our esteemed luxuries, but which seems to have become indispensable in household economy, though formerly it was found only in the apothecary's store of dreaded drugs, being esteemed as a useful medicine in the cure of febrile and other diseases.

Grasses are also remarkable from the fact of their cuticle containing a quantity of siliceous matter, similar to that yielded by the Equisetums; it is this which accounts for the vitrified masses which have sometimes been found in the ashes of corn or hay-stacks, when destroyed by fire. This siliceous secretion is perhaps effected at a greater rate in the hotter than in the temperate climates. In the sugar plantations, where the canes, after the extraction of the juice, become the principal fuel used for the fires kept up under the pans, &c., large masses of vitrified substance are frequently found in the grates and amidst the ashes: these masses excited considerable curiosity and speculation, before the circumstance had been properly investigated and explained.

Grasses, though found in almost every part of the globe, are far, however, from being equally distributed. In tropical countries, they are less numerous than in extra-tropical climates; they grow to a much greater size and height, are tougher, more wiry, having broader leaves, the flowers more elegant and downy; nor do they usually grow crowded together in close compact tufts, but are scattered and wide asunder, some species assuming an arborescent form, and attaining an amazing altitude, as *Panicum arborescens*, a most extraordinary grass, growing in the woods of Hindostan: its culms or stems, although not so thick as the little finger, grow so high as to o'ertop the loftiest trees, above which they form, as it were, an aerial meadow, gracefully waving in the balmy breeze.

The Bamboo, as already intimated, is one of those surprising tropical grasses, of which we have no parallel in temperate climates. An idea of the grandeur and beauty which these magnificent arborescent grasses impose upon the face of their native country, may perhaps be best collected from the account of Captain Basil Hall, who, after travelling during the night in a palanquin, from the bare table-land of Mysore, towards the hilly and thickly wooded regions overhanging the Malabar country, awoke in the morning, when, says he, "I found myself in the midst of one of the most curious and magnificent scenes which my eyes had ever beheld. It appeared as if I were travelling among the clustered columns of some enormous and enchanted Gothic Cathedral, compared to which the Minster of York, or the Cathedral at Winchester, would have seemed mere baby-houses; the ground extended on all sides, as smooth and flat, and clear of underwood, as if the whole had been paved with grave-stones. From this level surface rose on every

hand, and as far as the eye could penetrate into the forest, immense symmetrical clusters of bamboo, varying in diameter at their base from six feet to twenty or thirty, and even to twice that width, as I ascertained by actual measurement. For above eight or ten feet from the ground, each of these clusters or columns preserved a form nearly cylindrical, after which they began gradually to swell outwards, each bamboo assuming for itself a graceful curve, and rising to the height, some of sixty, some of eighty, and some even of one hundred feet in the air, the extreme end being at times horizontal, or even drooping gently over, like the tips of the feathers in the Prince of Wales's plume. These gorgeous clusters stood at the distance of from fifteen or twenty yards from one another, and being totally free from the interruption of brush wood, could be distinguished at a great distance—more than a mile certainly, in every direction, forming under the influence of an active imagination, naves and transepts, aisles and choirs, such as none but a Gothic architect ever dared to conceive. Overhead the interlacing curves of the bamboos constituted as complete a groined roof as that of Winchester or Westminster, on a scale of grandeur far beyond the bold conception even of those wonderful artists who devised that glorious school of architecture.

“On counting the separate bamboos in some of the smallest, and also in some of the largest clusters, I found the numbers to vary from twenty or thirty to upwards of two hundred, and the height generally from sixty to a hundred feet from the ground, to the point of intersection of the curves overhead. Most of the bamboos were somewhat thicker than a man's thigh at the ground, where, as I have before said, they are clustered so close as to be almost in contact. They then taper off very gradually to the extreme end, where the point is not thicker than a quill.

“There occurs a joint at about every foot and a half, distinguished not only by a slight flat ring or fillet, but by a set of small branches, eight or ten feet long, striking out at right angles to the main bamboo. These minor shoots are again divided into joints, from which other series of shoots, still more minute, are thrown out, and so on for many successions, the last always terminating in a sharp pointed narrow leaf two or three inches long, and half an inch wide in the middle not unlike a large tea leaf when spread out. As each bamboo of the hundred or more, forming the cluster, sends out shoots from every joint, and as all the joints of these subordinate plants do the same, a compact mass is formed by these innumerable little branches, which cross one another at every possible angle. If a person were to fill a hat full of pins and needles, and shake it about for some minutes, it might give a notion of the inextricable confusion which is presented to the eye in looking into one of these clustered columns of bamboos. It is only at the top, where the bend takes place, that the foliage has full room to play, or where the tapering arms of this magnificent plant form, by their meetings and crossings, a complete system of pointed arches

“What surprised me very much, and greatly puzzled me at first, was, to observe that, notwithstanding the multitude of lateral shoots from each of the main bamboos, and from all the subordinate branches, not a single trace of displacement, or the slightest obstruction to the growth of any branch, could be detected. Every person must have heard of the astonishing rapidity of the growth of the bamboo; it is said, indeed, that in one season it starts up to its whole length. I do not know if this be true, but am quite certain that if one of the main bamboos were to spring from the ground in the centre, or even near the sides of the cluster, and that from its joints there were at the same time to sprout out the lateral branches I have described, it would be impossible for the main stem to force its way through the obstructions presented by the network, formed by the little branches growing from the joints of the other bamboos in the cluster.” The author goes on to state he thinks we can “perceive how nature manages this difficult affair. When the bamboo first springs out of the ground, it is about as thick as a man’s wrist, always highly polished, with an extremely hard point; and as no lateral shoots are put out until it has attained its full height, it readily makes its way through the thickest ramified masses, while the subordinate branches, growing in like manner, find no difficulty in piercing this complicated mass of vegetable life.

“I saw,” continues Captain Hall, “bamboos in every different stage of this process, and particularly I noticed several of the main stems rising to the height of seventy feet and upwards, of a clear yellow colour, and evidently of recent growth, but without a single lateral branch growing from their joints from top to bottom; and this led me to infer that their extreme height had not been reached, or was but just attained.”

Bamboos are applied to many useful purposes both in India, China, and Japan. The tender tops are used to form a pickle; an excellent paper is manufactured from the tissue of the stem; and the stems themselves are used in a great variety of purposes, such as the making of furniture for their houses, cups, tubs, and boxes; also in the construction of dwellings, which are sometimes covered with the gigantic leaves of the Banana; in making water pipes, and in the construction of fences. The substance called in India *tabasheer*, is procured from the joints; it was found by Dr. TURNER to consist of silica, with a minute portion of lime and vegetable matter.

In the extra-tropical countries, and especially in the temperate regions, the grasses are far more numerous than within the tropics; they are also much smaller, seldom exceeding three or four feet in height; of a more tender and succulent nature, and better suited for the food of grazing cattle. They are likewise for the most part found growing in society, and that so densely as to form the compact green turf which carpets our meadows and fields, and clothes the banks of the meandering stream, or borders the acclivities upon many of our most rapid rivers: in short there appears, as already stated, scarcely any limit to

their growth, as regards soil or situation. Grasses either in their naturally succulent state, or when dried in the condition of hay, constitute the chief support of those animals which man has subjected to his service, as well as those which principally supply him with animal food. Here we observe another of those admirable arrangements of a beneficent Providence, in the distribution of the *pastoral grasses*, which are fitted for the food of so many living creatures, thus becoming an indirect means of administering to the wants of man, in those countries where animal food is wanted to sustain him in health and vigour; while in tropical latitudes, where less animal food is required, gramineous vegetables are, as already observed, less numerous, but more stately, and fitted rather to afford shade and protection from the rays of the scorching sun, than as a means of supporting life.

The importance of grasses in the scale of the creation, might be inferred from the CREATOR's command—

“ Let the earth

Put forth the verdant grass, herb yielding seed,
And fruit-tree yielding fruit after her kind,
Whose seed is in herself upon the earth.
He scarce had said, when the bare earth, till then
Desert and bare, unsightly; unadorned,
Brought forth the tender grass, whose verdure clad
Her universal face with pleasant green;
Then herbs of every leaf, that sudden flowered,
Opening their various colours, and made gay
Her bosom, smelling sweet.”

MILTON.

Those marked peculiarities which are observable in the attainment of perfection, and the term of existence in vegetables, are equally seen in grasses, i. e. some are annual, arriving at a state of perfection and dying away in the course of a year, as *Alopecurus agrestis*, *Poa annua*, &c.; others are perennial, arriving at perfection in two or three years, and continue growing to an indefinite period, as *Dactylis glomerata*, *Phleum pratense*, &c.; there are, however, very few species that require a longer period of time than this, before they attain their greatest state of perfection, supposing them to be grown in the soil and situation suited for them; for peculiar grasses grow best, and can only be cultivated with profit or advantage under those circumstances; hence, those agriculturists who would cultivate their land with the greatest success, must either choose the grasses suited to the soil, or so alter the nature of the soil by tillage as to render it suitable for the grasses themselves. The circumstance, too, of some grasses coming to a state of perfection in a short time, while others require a much longer period, will have material influence in determining the choice of those species which are wanted either for the alternate husbandry, or for permanent pasturage.

The immense importance which has in all ages and countries been attached to the growth of corn, as affording what has been emphatically designated “the staff of life,” has caused the greatest attention to be

paid to the cultivation of all the cereal gramineæ; while to that paramount object, there has been added, in this country especially, an almost equal share of consideration in the production, situation, and improvement of the various grasses suited for pasturage and hay. The success which has attended this course, identified as it has been with scientific as well as practical skill, and also pursued under the most favourable circumstances of soil and climate, has placed Great Britain in the very highest position among the countries engaged in agricultural experiments.

From the foregoing facts and considerations alone, the value of a botanical acquaintance with this very important tribe of vegetables to the agriculturist, in the successful cultivation of his land, will be obvious.

The *Cereal*, or *corn-grasses*, though the least numerous division of this vast tribe, are nevertheless, as already intimated, of the greatest importance, as from them the great mass of mankind directly receive the principal articles of their sustenance. The chief of these grasses, or those which are most familiarly known, and cultivated to the greatest extent from the value of their farinaceous seeds, are—Wheat, *Triticum*; Rice, *Oryza*; Maize, *Zea*; Rye, *Secale*; Barley, *Hordeum*; the Oat, *Avena*; and Millet, *Sorghum*. These, which are the principal grasses commonly cultivated in this and other countries for the value of their grain, are indebted for the preference which they have obtained in the estimation of mankind, to the large size of the seeds, and abundance of fœculent matter which they contain; not that even the seeds of the pastoral grasses are less wholesome, with the exception of *Lolium temulentum*, but on account of their much smaller size, and the little fœculent matter which they contain, they are of comparative little or no value as corn-grasses.

For an account of the distribution of the Cerealia, the following is an extract from an interesting paper on the Geographical Distribution of Grasses, by Schouw, from Professor Jameson's *Edinburgh Philosophical Journal*, for 1825:—"A detailed representation of the distribution of the cultivated Gramineæ would certainly be very interesting. Here we must restrict ourselves to a short and general outline. We shall endeavour to specify those Gramineæ which are the prevailing ones in the larger zones and continents, mentioning in passing those plants of other families which either supply the place of, or are associated with, the different kinds of grain, as the chief articles of food. This distribution is determined, not merely by climate, but depends on the civilisation, industry, and traffic of the people, and often on historical events.

"Within the northern polar circle, agriculture is found only in a few places. In Siberia grain reaches at the utmost only to 60°, in the eastern parts scarcely above 55°, and in Kamtschatka there is no agriculture even in the most southern parts (51°). The polar limit of agri-

culture on the north-west of America appears to be somewhat higher; for, in the more southern Russian possessions (57° to 58°), barley and rye come to maturity. On the east coast of America it is scarcely above 50° to 52° . Only in Europe, namely in Lapland, does the polar limit reach an unusually high latitude (70°). Beyond this, dried fish, and here and there potatoes, supply the place of grain.

"The grains which extend farthest to the north of Europe are barley and oats. These, which in the milder climates are not used for bread, afford to the inhabitants of the northern parts of Norway and Sweden, of a part of Siberia and Scotland, their chief vegetable nourishment.

"Rye is the next which becomes associated with these. This is the prevailing grain in a great part of the northern temperate zone, namely, in the south of Sweden and Norway, Denmark, and in all the lands bordering on the Baltic; the north of Germany, and part of Siberia. In the latter, another very nutritious grain, buck wheat, is very frequently cultivated. In the zone where rye prevails, wheat is also generally found; barley being here chiefly cultivated for the manufacture of beer, and oats supplying food for the horses.

"To these there follows a zone in Europe and western Asia, where rye disappears, and wheat almost exclusively furnishes bread. The middle, or the south of France, England, part of Scotland, a part of Germany, Hungary, the Crimea and Caucasus, as also the lands of middle Asia, where agriculture is followed, belong to this zone. Here the vine is also found; wine supplants the use of beer; and barley is consequently less raised.

"Next comes a district where wheat still abounds, but no longer exclusively furnishes bread; rice and maize becoming frequent. To this zone belong Portugal, Spain, part of France on the Mediterranean, Italy, and Greece; further, the countries of the east, Persia, northern India, Arabia, Egypt, Nubia, Barbary, and the Canary Islands; in these latter countries, however, the culture of the maize or rice, towards the south, is always more considerable, and in some of them several kinds of *Sorghum* (*Doura*) and *Poa Abyssinica* come to be added. In both these regions of wheat, rye only occurs at a considerable elevation; oats, however, more seldom, and at last entirely disappear; barley affording food for horses and mules.

"In the eastern parts of the temperate zone of the Old Continent, in China and Japan, our northern kinds of grain are very unfrequent, and rice is found to predominate. The cause of this difference between the east and west of the Old Continent appears to be in the manners and peculiarities of the people. In North America, wheat and rye grow as in Europe, but more sparingly. Maize is more reared in the Western than in the Old Continent, and rice predominates in the southern provinces of the United States.

"In the torrid zone, maize predominates in America, rice in Asia, and both these grains in nearly equal quantity in Africa. The cause

of this distribution is, without doubt, historical ; for Asia is the native country of rice, and America of maize. In some situations, especially in the neighbourhood of the tropics, wheat is also met with, but always subordinate to these other kinds of grain. Besides rice and maize, there are in the torrid zone several kinds of grain, as well as other plants, which supply the inhabitants with food, either used along with them or entirely occupying their place. Such are in the New Continent, Yams (*Dioscorea alata*), the Manihot (*Jatropha manihot*), and the Batatas (*Convolvulus batatas*), the root of which and the fruit of the Pisang (*Banana*, *Musca*), furnish universal articles of food. In the same zone, in Africa, Doura (*Sorghum*), Pisang, Manihot, Yams and *Arachis hypogæa*. In the East Indies, and on the Indian Islands, *Eleusine coracana*, *E. stricta*, *Panicum frumentaceum* ; several Palms and *Cycadææ*, which produce the sago ; Pisang, Yams, Batatas, and the Bread-fruit (*Artocarpus incisa*). In the islands of the South Sea, grain of every kind disappears, its place being supplied by the Bread-fruit tree, the Pisang, and *Tacca pinnatifida*. In the tropical parts of New Holland there is no agriculture, the inhabitants living on the produce of the Sago, of various Palms, and some species of *Arum*.

“ In the high lands of South America, there is a distribution similar to that of the degrees of latitude. Maize, indeed, grows to the height of 7,200 feet above the level of the sea, but only predominates between 3,000 and 6,000 of elevation. Below 3,000 feet it is associated with the Pisang, and the above-mentioned vegetables ; while from 6,000 to 9,260 feet, the European grains abound ; wheat in the lower regions, and rye and barley in the higher ; along with which *Chenopodium Quinoa*, as a nutritious plant, must also be enumerated. Potatoes alone are cultivated from 9,260 to 12,300 feet.

“ To the south of the tropic of Capricorn, wherever agriculture is practised, considerable resemblance with the northern temperate zone may be observed. In the southern parts of Brazil, in Buenos Ayres, in Chili, at the Cape of Good Hope, and in the temperate zone of New Holland, wheat predominates ; barley, however, and rye make their appearance in the southernmost parts of these countries, and in Van Diemen's Land. In New Zealand, the culture of wheat is said to have been tried with success ; but the inhabitants avail themselves of the *Acrostichum furcatum* as the main article of sustenance.

“ Hence it appears, that, in respect to the predominating kinds of grain, the earth may be divided into five grand divisions or kingdoms—the Kingdom of Rice, of Maize, Wheat and Rye, and lastly, of Barley and Oats. The first three are the most extensive ; the maize has the greatest range of temperature ; but rice may be said to support the greatest number of the human race.”

Corn, from its inestimable value, has been from time immemorial considered the emblem of *Riches* ; and Ceres, the daughter of Saturn and Ops, has long been its goddess. The broken straw, we are inform-

ed, from a very early period, even in the history of monarchy, has been used to express the breaking of treaties, and dissatisfaction; it is now, in the emblematic language of Flora, used to express a feeling of *dissention*, or *rupture*; and Grass, from its extensive distribution, use, and value, as a token of *utility*.

Zea Mays is the name of the now-so-generally-known Indian Wheat plant, Maize; this corn is indigenous to America, and is cultivated with success in Italy, and various other parts of Europe: it has been grown with partial success in the warmer parts of this country: but the produce of its grain with reference to domestic purposes, is so inferior to wheaten flour, as to render its cultivation here of little value.

Oryza sativa, the Rice plant, produces the grain which, after undergoing certain operations, forms the principal food upon which vast multitudes of the inhabitants in all parts of the eastern world are supported. Large quantities of it are also annually imported into this country, and applied to a variety of domestic purposes. It is from this grain that the spirituous liquor called *arrack* is made. The cultivation of Rice in those hot countries where it forms a staple commodity, is an exceedingly unhealthy occupation; it is chiefly grown in gradually sloping valleys, or upon plains, which are favourably situated for being flooded either by means of the natural rivers, or from large artificial tanks or reservoirs of water, which have been raised with immense labour on the sides or across the valleys; so that the fields are kept in a constant swampy state during certain seasons of the year, which, with the heat of the climate, greatly favours the production of malaria.

It is a remarkable fact, that while ferns of the most delicate character are (as we shall hereafter have occasion to notice more particularly) found enveloped in the shale and other matters of the coal formation, the cereal and pastoral grasses, which constitute so considerable a portion of the vegetable covering of almost every region of the globe, have not, it is believed, been noticed in a fossil state. The casts of plants found in connexion with the coal are, it is true, for the most part analogous to those of tribes at present flourishing only in tropical climates, where the smaller grasses, as above noticed, are much less common than in temperate latitudes. In corroboration of the foregoing statement, the authority of Messrs. Lindley and Hutton may be cited: these competent observers assert, that "no trace of any glumaceous plant has been met with, even in the latest Tertiary Rocks, although we know that grasses now form a portion, and usually a very considerable one, of every Flora of the World, from New South Shetland to Melville Island inclusive. It may indeed be conjectured, that before the creation of herbiferous animals, grasses and sedges were not required, and therefore are not to be expected in any beds below the Forest Marble and Stonesfield Slate; but it is difficult to conceive how the animals of the upper Tertiary beds could have been fed, if grasses had not then been present."—*Fossil Flora*, Preface, p. 13. It may,

however, be remarked, that some of the largest animals at present known to exist, are rather browsing than grazing animals.

The injury to which grasses are liable by the depredation of insects, parasitic fungi, and disease, is an extremely interesting part of their history, but cannot with propriety be here treated of.

GENUS XV. ALOPECURUS. LINN. *Foxtail-grass.*

GEN. CHAR. *Panicle* spiked. *Glumes* of two simple nearly equal valves, mostly united at the base. *Glumella* of one valve, with an awn rising from the base.—Name from *αλωπηξ*, a fox, and *ουρα*, a tail; in reference to the resemblance which the inflorescence has to a fox's tail.

1. *A. pratensis*, Linn. (Fig. 92.) *Meadow Foxtail-grass.* Stem erect, smooth, panicle spiked, nearly cylindrical, obtuse, glumes of two lanceolate acute hairy valves, united at the base, glumella ovate acute, awn twice as long.

English Botany, t. 759.—English Flora, vol. i. p. 80.—Lindley, Synopsis, p. 299.—Hooker, British Flora, vol. i. p. 33.—Sinclair, Hort. Gram. Woburn. p. 139.

Root fibrous. *Stems* from one to three feet high, erect, (except to the first joint at the base, which is often prostrate,) smooth, leafy, striated, tufted at the base. *Leaves* flat, smooth, or slightly pubescent, a somewhat glaucous green, upper ones much shorter, rougher, with longer, more deeply striated, and slightly swelling sheaths. *Ligula* short, obtuse. *Inflorescence* a close panicle spike, from one to two inches long, soft and silky from the *glumes*, which are downy and ciliated, remarkably compressed, united at the base (*connate*), and marked with three green ribs. *Awn* arising from near the base, about as long again. *Anthers* yellow, conspicuous. *Styles* united, longer than the glumella. *Stigmas* spreading, feathery. *Seed* small, brown, ovate.

Habitat.—Fields and meadows, common everywhere.

Perennial; flowering from May to July.

Meadow foxtail-grass is one of the most useful and valuable pastoral grasses, especially for permanent pastures on a moderately light soil, with a good supply of moisture, and "should never," observes Mr. Sinclair, "form a less proportion than one-eighth of any mixture of different grasses prepared for that purpose;" and the same author further remarks, that "the meadow foxtail constitutes part of the produce of all the richest pastures I have examined in Lincolnshire, Devonshire, and in the vale of Aylesbury. In Mr. Westcar's celebrated pastures at Creslew, I found it more prevalent than in those of Devonshire and Lincolnshire." As it does not, however, attain its greatest state of productiveness until at least four years after it has been sown, it is not



92.

Alopecurus pratensis.



93.

Alopecurus alpinus.



94

Alopecurus agrestis.



95.

Alopecurus bulbosus.



a grass fitted for the alternate husbandry. It is of early growth, very productive, of good quality, and highly nutritive, grateful to most cattle, and may be mown with advantage twice a year. Few, if any, of our native grasses possess more valuable properties than this: it is not only remarkable for its early growth, but equally so for its lateness. In certain situations, it may not unfrequently be observed in a vigorous state of growth from the end of March till very late in the autumn. In those pastures where it forms any considerable portion of the herbage, the treatment pursued is often at variance with those means best calculated to secure the full amount of advantage which, with judicious management, its many excellent properties are calculated to supply. In such pastures, the most prevailing error is in allowing it to become too gross before the cattle are turned in to eat it down; in consequence of which, it may be observed, that a large portion of the pasture is left untouched by the cattle until autumn or winter, by which time this and some other species of rapid growth will have extended themselves, and usurped the place of the less luxuriant kinds, thereby destroying one of the most essential qualities which pasture land ought to possess—that of an equal and extensive mixture of grasses.

A similar error is often committed in the management of fields devoted to the cultivation of hay, by delaying the mowing season long after this and some other of the earlier and most nutritious kinds have attained maturity, and their most valuable properties passed into a state of decay. By such delay, the weight of the crop, it is true, may be somewhat increased; but it will always be found that this additional weight in the hay will be obtained by a proportional deterioration both in its quality and nutritious properties, as well as a loss in the produce of the after math.

2. *A. alpinus*, Sm. (Fig. 93.) *Alpine Foxtail-grass*. Stem ascending, panicle spiked, ovate, glumes of two ovate, abruptly acute, hairy valves, united at the base, awn of the glumella scarcely protruding.

English Botany, t. 1126.—English Flora, vol. i. p. 81.—Lindley's Synopsis, p. 299.—Hooker, British Flora, vol. i. p. 33.

Root somewhat creeping, fibres long and branched. *Stem* from twelve to eighteen inches high, procumbent at the base, smooth, leafy, striated. *Lower leaves* longer than the sheaths, linear, striated, smooth, upper one much shorter than the inflated sheath. *Ligula* short, obtuse. *Inflorescence* spiked, short, ovate, dense, soft, downy. *Glumes* united at the base, abruptly pointed, ribs three, a dark purplish green, ciliated, hairs fine, silky. *Glumella* ovate acute, slightly hairy, keel narrow, ribs two on each side, green. *Awn* arising from near the base, about the same length, rough. *Styles* combined. *Stigmas* protruding, feathery.

Habitat.—Very rare. "Discovered by Mr. R. Brown on Loch na Garr, in Aberdeenshire; White Water, and other streams of Clove—

Mr. H. C. Watson, Dr. Graham." Loch Whorol, Clove—Dr. Hooker, Mr. J. D. Hooker; to whose kindness we are indebted for beautiful specimens of this and other rare plants.

Perennial; flowering in July and August.

This species is readily distinguished from all other of the genera, by the short ovate panicle, the short upper leaf with its inflated sheath, the abrupt glumes, and the short rough awn.

3. *A. agrestis*, Linn. (Fig. 94.) *slender Foxtail-grass*. Stem erect, scabrous above, panicle spiked, slender, cylindrical, tapering, glumes nearly smooth, united from the base to about the middle.

English Botany, t. 848.—English Flora, vol. i. p. 81.—Lindley, Synopsis, p. 299.—Hooker, British Flora, vol. i. p. 33.—Sinclair, Hort. Gram. Woburn. p. 283.

Roots numerous, fibrous, sending up numerous *flowering stems*, which are bent at the base, becoming erect, rough in the upper part, leafy at the base, but more distant above, from one to two feet high, finely striated. *Leaves* pale, linear, rough on the under side, and edges with fine sharp teeth pointing towards the end. *Sheaths* striated, upper ones slightly inflated. *Ligula* somewhat downy, striated, obtuse, mostly jagged or torn at the end. *Inflorescence* spiked, long, slender, cylindrical, pointed, frequently purplish. *Glumes* lanceolate acute, united by their edges nearly half the length of the valves, smooth, three-ribbed, which are green or purplish towards the apex, slightly keeled, which is more or less rough. *Glumella* quite smooth, three-ribbed, with the *awn* arising from near the base about as long again. *Styles* short, united. *Stigmas* feathery. *Seed* ovate.

Habitat.—Fields and waysides in a poor soil, common.

Annual; flowering from June to October.

This is a grass of very inferior quality, and of no value for agricultural purposes, as it is said to be refused by almost all cattle. It prefers a poor exhausted soil, and in some places is a very troublesome weed, difficult to be extirpated, producing flowering stems and an abundance of seed during nearly the whole summer. The seed is of a large size, and affords food for small birds, pheasants, and partridges; and may be sown with advantage on a poor soil in game preserves and shady situations, forming a cover for them during the whole summer, as well as furnishing them with a constant and plentiful supply of food. The appearance of this grass upon cultivated land is a natural witness of its poor and ill-conditioned state: it delights to grow, and thrives best, on those lands exhausted by a repeated rotation of impoverishing crops; and a remarkable circumstance in the habit of this grass is, that when the land is again brought into a good condition, it disappears; but otherwise it is most difficult to be removed, and consequently a most troublesome weed.

4. *A. bulbo'sus*, Linn. (Fig. 95.) *tuberous Foxtail-grass*. Stem erect, panicle spiked, cylindrical, tapering, glumes lanceolate acute, slightly hairy, not united at the base, root with tubers.

English Botany, t. 1249.—English Flora, vol. i. p. 82.—Lindley, Synopsis, p. 299.—Hooker, British Flora, vol. i. p. 33.

Root fibrous. *Stem* erect, from six to ten inches high, solitary, smooth, finely striated, leafy, the lower part frequently bent and swollen into a solid tuber or bulb; sometimes there are several, one above another, between the joints, which are in this part of the stem near each other, and from each of them roots and a single stem are put out. *Leaves* narrow, striated, shorter above, with long swelling sheaths. *Ligula* lanceolate, decurrent, striated. *Inflorescence* subspicate, dense, the *pedicels* for the most part short, each bearing a fertile and an abortive flower. *Glumes* lanceolate, acute, and purple at the point, quite free to the base, slightly downy all over, but more so on the keel and ribs, which are purple. *Glumella* blunt, shorter than the glumes, with an *awn* arising from near the base, and about twice as long. *Anthers* scarcely longer than the glumes. *Styles* united. *Stigmas* feathery, protruding. *Seed* ovate.

Habitat.—Salt marshes in England, very rare; Yarmouth, Weymouth; in Cardiff marshes, Wales.

Perennial; flowering in July.

5. *A. genicula'tus*, (Fig. 96.) *floating Foxtail-grass*. Stem ascending, bent at the joints, panicle spiked, cylindrical, obtuse, glumes obtuse, united at the base, slightly hairy, glumella obtuse, the awn arising from its base varying in length.

English Botany, t. 1250.—English Flora, vol. i. p. 83.—Lindley, Synopsis, p. 300.—Hooker, British Flora, vol. i. p. 33.—Sinclair, Hort. Gram. Woburn. p. 353.

β. ful'vus, awn the length of the calyx. *Alopecu'rus ful'vus*.—English Botany, t. 1467.—English Flora, vol. i. p. 83.—Hooker, British Flora, vol. i. p. 34.—Lindley, Synopsis, p. 300.

γ. bulbo'sus, roots with bulbs,—English Flora, vol. i. p. 83.—*Alopecu'rus genicula'tus bulbo'sus*, Sinclair, Hort. Gram. Woburn. p. 301.

Root fibrous. *Stem* varying in length from six inches to two feet, prostrate in the lower part, and frequently sending out roots and branches from the joints, smooth, striated, leafy, erect from the last joint. *Leaves* short, finely ribbed, rough on the upper side and edges, smooth beneath. *Sheaths* smooth, striated, upper ones inflated. *Ligula* oblong, clasping the stem. *Inflorescence* a dense blunt erect spike, from one to two inches long, often purplish. *Glumes* obtuse, united at the base, terminating in a minute point, hairy, ciliated at the keel. *Glumella* obtuse, or slightly notched, shorter than the glumes, smooth, or slightly hairy towards the extremity. *Awn* arising from near the base, generally as long again as the glumella, but not unfrequently

about the same length. *Anthers* mostly yellow, but varying in colour to dark brown or purple. *Styles* short, united. *Stigmas* feathery.—*β. fulvus*, made by Sir J. E. Smith a species, has been, by all succeeding botanists, considered very doubtful; the colour of the anthers we have observed to be very various in specimens both with long and short awns; and although we have not found the awn so often as short as that represented in English Botany, yet still so very variable in length, as to induce us to think it a variety, rather than a species.

Habitat.—Common by the side of pools, in marshes, and wet meadows, sometimes on walls.

Perennial; flowering from June to August.

This plant is remarkably various in size, which circumstance greatly depends upon the situation of its growth; when grown by the side of pools or wet drains in a rich soil, the stems may be observed more than two feet long, either floating on the surface of the water, or trailing on the wet ground, and taking root from the joints; the leaves broader and longer than when grown in drier situations. It is remarkably tenacious of life, and although mostly found in the situations above named, it is occasionally observed in very dry places, even on the tops of walls, when it has bulbs superadded to its fibrous roots. It is of little or no agricultural utility, both on account of its natural habit and the little nutritive matter it affords.

GENUS XVI. PHA'LARIS. LINN. *Canary-grass*.

GEN. CHAR. *Panicle* contracted, or spreading. *Glumes* two, equal, keeled, longer than the glumella. *Glumelles* of two equal, awnless valves, at length forming an indurated covering to the seed, and accompanied at its base with one or two unequal imperfect florets. Name from *Φαλος*, *white*, or *shining*; in reference to the glossy covering of the seed.

1. *P. canarien'sis*, Linn. (Fig. 97.) *cultivated Canary-grass*. Stem erect, panicle compact ovate, glumes boat-shaped, compressed, keeled, each valve of the glumella with an abortive floret at the base.

English Botany, t. 1310.—English Flora, vol. i. p. 74.—Lindley, Synopsis, p. 300.—Hooker, British Flora, vol. i. p. 34.—Sinclair, Hort. Gram. Woburn. p. 399.

Root of numerous white fibres. *Stem* erect, from one to two feet high, leafy, glaucous, striated. *Leaves* broad, lanceolate, soft, somewhat pubescent. *Sheaths* long, striated, upper ones considerably inflated. *Ligula* obtuse. *Inflorescence* an obtuse spike. *Glumes* large, pale, yellow, with two green lines, and a remarkably broad keel at the back, entire at the point, and containing a *perfect* floret of two pointed shining hard cartilaginous hairy valves, and two *imperfect* florets, each

of one membranous scarcely hairy valve. *Stigmas* protruding. *Seed* ovate, light brown.

Habitat.—Waste places and brick-fields that have been some time neglected.

Annual; flowering in July.

These, like many other annual plants, possess in a remarkable degree the property of adapting themselves, not only to an extensive range of climate, but also to situations exceedingly different. This plant, though not unfrequent in various parts of both England and Scotland, (for which reason it is admitted into our Floras,) is a “native of the Canary Isles,” and cultivated in this country for the seed, which is well known as the canary-seed, and used for the purpose of feeding canaries and other small birds; the chaff is relished by horses, but the cultivation of the grass for agricultural purposes possesses no properties by which it can be recommended. It is sometimes cultivated in the flower-garden for the beauty of its variegated spike, and when dried it forms an elegant winter decoration.

2. *P. arundina'cea*, Linn. (Fig. 98.) *Reed Canary-grass*. Panicle erect, its branches spreading, spikelets numerous, clustered, turned to one side, abortive florets one or two, small, hairy.

English Botany, t. 402, and t. 2160, fig. 2.—English Flora, vol. i. p. 75.—Hooker, British Flora, vol. i. p. 34.—Sinclair, Hort. Gram. Woburn. p. 359.—*Digra'phis arundina'cea*, Lindley, Synopsis, p. 301.

Root much tufted with long creeping underground stems. *Stems* from three to five feet high, erect, strong, smooth, leafy. *Leaves* broad, flat, lanceolate, tapering at the point, spreading, rough, especially towards the points, finely striated, as are also the *sheaths*, which are smooth, and closely embracing the stem. *Ligula* obtuse, somewhat decurrent. *Inflorescence* a large open panicle, its branches spreading, angular. *Glumes* equal, lanceolate, keeled, ribbed, roughish on the keel, often tinged with brown or purplish. *Glumelles* two, nearly equal, smooth and shining, cartilaginous, each mostly bearing at its base a small membranous hairy valve of an imperfect floret.

A variety with variegated leaves is frequently cultivated in gardens, and is commonly known by the name of Ribbon-grass, Ladies' Traces, Painted Lady-grass, &c.

Habitat.—Common on the margins of lakes, rivers, and ditches; the variegated variety is occasionally found in a wild state in Cambridge-shire, and “near Cardigan—Rev. J. S. Tozer.”

Perennial; flowering in July and August.

This grass was formerly known by the name of *Arun'do colora'ta*. It does not possess any properties so as to render it worthy the notice of the agriculturist, except in low wet clayey districts. It contains a considerable quantity of nutritive matter, but is not eaten by cattle from choice; nevertheless, as a winter provender, it might be

cut up with other hay of a finer quality, either for horses or other cattle, The tough long underground stems are of considerable utility in fortifying the banks, and resisting the encroachments, of rapid streams.

GENUS XVII. AMMO'PHILA. Host. *Sea-reed*.

GEN. CHAR. *Panicle* spiked. *Glumes* nearly equal, keeled. *Glumelles* shorter than the glumes, hairy at the base, the *outer valve* awned beneath the bifid apex.—Name from *αμμος*, sand, and *φίλος*, a lover; the plant delighting to grow in loose sand.

1. *A. arundina'cea*, Host. (Fig. 99.) *common Sea-reed*, *Sea Mat-weed*. *Panicle* spiked, pointed, glumes acute, outer one shortest, glumelles surrounded with short hairs, inner valve with an abortive hairy floret at its base.

Hooker, *British Flora*, vol. i. p. 34.—*Ammo'phila arena'ria*, Lindley, *Synopsis*, p. 302.—*Arun'do arena'ria*, Linn. *English Botany*, t. 520.—*English Flora*, vol. i. p. 172.—Sinclair, *Hort. Gram. Woburn*. p. 371.

Root with very long, tough, jointed *underground stems*. *Stem* from two to three feet high, erect, often bent near the base, round, smooth, finely striated, very rigid. *Leaves* long, narrow, the edges rolled inwards, rigid, with a very sharp point, smooth, glaucous. *Sheaths* close, smooth, striated. *Ligula* long, lanceolate, generally torn. *Inflorescence* a compact spiked panicle, swelled in the middle, a pale green or straw colour. *Glumes* with a slight rib on each side, rough on the keel, especially towards the extremity, the keel of the inner valve terminating in a short point between the bifid apex. *Glumelles* of two valves, shorter than the glumes, roughish, with minute points, and surrounded at the base with a tuft of glossy bristles, *outer valve* the largest, with two ribs on each side, the keel terminating in a rough point, shorter than the acute membranous lobes on each side of it, *inner valve* smaller, with two slight lateral ribs, and two dorsalones; between the two latter, which run nearly parallel with each other, is a sinus, the whole length of the valve, having imbedded in the lower part of it a hairy awn-like abortive valve, about one-third the length, which arises from the receptacle above the insertion of the valve of the perfect floret. *Glumellules* long, lanceolate. *Anthers* linear, orange or purplish. *Styles* distinct, erect. *Stigmas* feathery.

Habitat.—Frequent on loose sandy sea-coasts.

Perennial; flowering in July.

The long tough creeping underground stems, which send out roots from the numerous joints, are of vast utility in preventing the sand from being drifted inland from the sea coast, and in binding the embankments raised either by natural or artificial means, as a barrier to the encroachments of the sea.



98.

Phalaris arundinacea.



99.

Ammophila arundinacea.



100.

Milium effusum.



101.

Gastridium lendigerum.



102.

Phleum pratense.



103.

Phleum alpinum.

GENUS XVIII. GASTRIDIDUM. BEAUV. *Nit-grass.*

GEN. CHAR. *Panicle* contracted, spiked. *Glumes* two, unequal, awnless, unequally swelled at the base, much longer than the *glumelles*, which form a covering to the seed; the outer valve mostly with a dorsal awn.—Name from γαστρίδιον, a little belly, or swelling; on account of the swollen base of the glumes.

1. *G. lendi'gerum*, Beauv. (Fig. 101.) *awned Nit-grass*. *Glumes* unequally lanceolate, *glumelles* equal membranous, the outer one awned.

Lindley, Synopsis, p. 302.—Hooker, British Flora, vol. i. p. 36.—*Mil'ium lendi'gerum*, Linn. English Botany, t. 1107.—English Flora, vol. i. p. 88.—*Agros'tis austral'is*, Linn.?

Root fibrous. *Stem* from six to ten inches high, branching at the base, smooth. *Leaves* lanceolate, acuminate, rough on the upper surface and edges. *Sheaths* striated, smooth, somewhat inflated. *Ligula* oblong, generally torn. *Inflorescence* a lobed spiked panicle, erect, tapering towards the end. *Glumes* shining, singularly swollen at the base, rough on the keel, compressed upwards, the outer valve the largest. *Glumelles* much smaller, membranous, downy; *outer valve* the largest, generally with a rough dorsal awn; *inner* bifid at the apex, hairy at the base. "Sometimes the rudiment of a second floret at the back of the inner valve." *Seed* covered with the indurated *glumelles*, and enveloped in the shining *glumes*.

Habitat.—Rare. In fields near the sea, where water has stagnated. In the Isle of Shepey; at Weymouth; Gillingham; and at Cley in Norfolk.

Perennial; flowering in August.

This is a very distinct genus from *Milium*, with which it was formerly united.

GENUS XIX. MILIUM. LINN. *Millet-grass.*

GEN. CHAR. *Panicle* spreading. *Glumes* two, equal, flattish, awnless, ribbed. *Glumelles* two, equal, shorter than the *glumes*, smooth, shining, ribless, without awns, forming a hard permanent covering to the seed.—Name from mille, a thousand; a name applied by the ancients to a sort of corn or grass, remarkable for the abundance of its seeds.

1. *M. effu'sum*, Linn. (Fig. 100.) *spreading Millet-grass*. Branches of the panicle spreading, partly whorled.

English Botany, t. 1106.—English Flora, vol. i. p. 87.—Lindley, Synopsis, p. 301.—Hooker, British Flora, vol. i. p. 36.—Sinclair, Hort. Gram. Woburn, p. 403.

Rapt fibrous, often with creeping *underground stems*, and putting up several erect, smooth, and leafy *flowering stems*, from three to four feet high. *Leaves* broad, flat, lanceolate, with one prominent rib and numerous small ones, the lower leaves rough on both sides and the edges, the upper ones less so, and quite smooth on the upper surface. *Ligula* oblong, blunt, frequently torn. *Inflorescence* an elegant wide-spreading panicle; its hair-like branches, which are roughish in the upper part, arise in half whorls, mostly on alternate sides, their base having a swollen articulation with the stem. *Flowers* single. *Glumes* thin, membranous, mostly three-ribbed, pale green, roughish. *Glumelles* smaller, very smooth and shining, concave, cartilaginous, persistent, and embracing the seed. *Styles* short. *Stigmas* feathery.

Habitat.—Frequent in moist woods and shady situations.

Perennial; flowering in June and July.

The panicles of this graceful and pretty grass are sometimes found near a foot long, and eight inches wide; the seeds are a favourite food of numerous birds, and the abundance which it produces, together with its naturally preferring to grow in the cool and shade of trees, sufficiently recommend it as a grass of great utility in game preserves; and its elegance and soft green colour would form an ornament of no inconsiderable beauty in the shade of plantations and pleasure grounds where but few other plants will grow.

GENUS XX. PHLE'UM. LINN. *Cat's-tail-grass*.

GEN. CHAR. *Panicle* spiked, compact. *Glumes* nearly equal, acuminate, or the keel terminating in an awn. *Glumelles* two, smaller, awnless, membranous. *Seed* oblong, loose.—Name from “φλεως, or φλεως, formerly applied, as is supposed, to the *Reed-mace* (*Typha*), to which our grass bears some distant resemblance.

1. *P. pratense*, Linn. (Fig. 102.) *common Cat's-tail-grass*, *Timothy-grass*. *Panicle* spiked, cylindrical; glumes abrupt, longer than its rough awn; keel ciliated at the back.

English Botany, t. 1076.—English Flora, vol. i. p. 76.—Lindley, Synopsis, p. 300.—Hooker, British Flora, vol. i. p. 34.—Sinclair, Hort. Gram. Woburn. p. 195.

β. nodo'sum, whole plant smaller, stem tuberous at the base.—*Phle'um nodo'sum*, Linn. Sinclair, Hort. Gram. Woburn. p. 199.

Root fibrous, sometimes sending out creeping *underground stems*. *Stem* erect, from one to four feet high, round, smooth, striated, leafy below, frequently bent at the lower joints, generally several from the same root. *Leaves* linear-lanceolate, flat, striated, rough, with fine points, especially on the under side. *Sheaths* long, striated, smooth, close. *Ligula* obtuse, torn. *Inflorescence* spiked, cylindrical, obtuse, varying

in length from two to six inches, very densely crowded, green or purplish. *Glumes* pale, membranous, with a strong, green, ciliated keel, terminating in a somewhat spreading, rough awn; the inner edge of the outer vale hairy. *Glumelles* unequal, small, obtuse, often crenated, ribbed with green. *Stigmas* feathery. *Seed* oblong.

Habitat.—Meadows, pastures, and waste ground, common.

Perennial; flowering from June to September.

This grass varies considerably in size, owing to the variety of situation in which it may have grown; the same circumstance is also the cause of the various appearances which are observed to take place in the roots. The utility of this grass for agricultural purposes varies considerably, according to the treatment. It contains, from the accounts of Sinclair, a greater proportion of nutritive matter than any other grass he submitted to experiment. Its herbage is early produced in the spring, but unless grazed while young, it becomes so gross as to be avoided by cattle; and its being grazed at this period does not decrease the value or quantity of hay which it afterwards produces; it is for the latter purpose that this grass is principally esteemed, but it is also of great value amongst other grasses, both for permanent pastures and the alternate husbandry. "This grass is the Highland badge of the clan Sutherland, whose crest is a cat."

2. *P. alpinum*, Linn. (Fig. 103.) *alpine Cat's-tail-grass*. Stem ascending; panicle spiked, ovate-oblong; glumes abrupt, about as long as its rough awn; keel ciliated at the back; root creeping.

English Botany, t. 2519.—English Flora, vol. i. p. 77.—Lindley, Synopsis, p. 300.—Hooker, British Flora, vol. i. p. 35.

Root with long underground stems. *Stem* from six to twelve inches high, ascending, branched at the base, leafy, smooth, striated, tinged with purple towards the top. *Leaves* flat, linear, with a distinct dorsal midrib, which is rough, as are also the edges, with fine cartilaginous teeth, pointed towards the extremity; upper ones short, with long inflated striated smooth sheaths. *Inflorescence* spicate, short, mostly of a dull purplish colour. *Glumes* abrupt, thin, smooth, slightly sprinkled with short hairs, purplish, with a strong green ciliated keel, terminating in a rough awn, about as long as the glume. *Glumelles* two, unequal; the external valve largest, abrupt, three-ribbed, the dorsal one rough, terminating in a short rough awn, and frequently the two lateral ones also; the internal one shorter, lanceolate, with a dorsal rough rib. *Glumellula* of two lanceolate valves. *Seed* ovate, dotted, closely invested with the glumella. *Style* short. *Anthers* yellow. *Stigmas* feathery.

Habitat.—Rare. Clove Mountains—Mr. J. D. Hooker; Ben Lawers and Garway Moor, Scotland.

Perennial; flowering in July.

This rare species of Scotch grass is readily distinguished by its short ovate spike, abrupt glumes, and long awn. It is remarked by Smith that the roots are tuberous, a character which we have not observed, but in all the specimens we have seen they are creeping, with numerous joints and whorls of long fibres sent out from each of them. In Salt's collection there are specimens communicated by "Mr. Sowerby, from Forfar," which have the leaves shorter and much broader, the sheaths more inflated and striated, and the whole plant much stouter, than is its usual appearance. Probably this difference may be from a luxuriant growth of the plants.

3. *P. asperum*, Jacq. (Fig. 104.) *rough Cat's-tail-grass*. Stem erect, often branched; panicle spiked, cylindrical, dense; glumes wedge-shaped, rough; awn short, blunt.

English Flora, vol. i. p. 77.—Lindley, Synopsis, p. 301.—Hooker, British Flora, vol. i. p. 35.—*Phleum paniculatum*, English Botany, t. 1077.

Root strong, fibrous. *Stem* from eight to twenty inches high, smooth and shining, tufted and branched, very leafy. *Leaves* somewhat rough, linear, sharply pointed. *Sheaths* smooth, striated, slightly swelled. *Ligula* oblong, obtuse, mostly torn. *Inflorescence* densely spicate, slightly tapering at each end, from two to three inches long, often enveloped at the base with the sheath of the upper leaf. *Glumes* wedge-shaped, swelling upwards, rough, with short pointed tubercles, terminated with a short rigid awn. *Glumelles* unequal, ribbed, and somewhat downy. *Anthers* short. *Stigmas* capillary. *Seed* small, brown, cylindrical.

Habitat.—Rare. In dry elevated fields in Bedfordshire, Gloucestershire, and Cambridgeshire.

Annual; flowering in July.

This plant, unknown to Linnæus, is the *Phalaris asper* of Retzius, Willdenow, and the French Botanists. *E. Bot.*

4. *P. Boehme'ri*, Schrad. (Fig. 105) *purple stalked Cat's-tail-grass*. Stem simple; panicle spiked, cylindrical; glumes lanceolate, acuminate, rough, ciliated at the keel.

English Flora, vol. i. p. 78.—Lindley, Synopsis, p. 301.—Hooker, British Flora, vol. i. p. 35.—Sinclair, Hort. Gram. Woburn. p. 317.—*Phalaris phle'oïdes*, Linn. English Botany, t. 459.

Root fibrous. *Stem* simple, erect, sometimes bent below, from six to eighteen inches high, smooth, except near the top, frequently purplish. *Leaves* short, rough, lanceolate, of a light-green or glaucous colour. *Sheaths* long, striated, harsh, scarcely inflated. *Ligula* obtuse. *Inflorescence* a close spiked panicle, from one to two inches long, purplish. *Glumes* lanceolate, strongly keeled, abruptly terminating in a point, scarcely awned, the keel ciliated with white hairs. *Glumelles*



101.

Phleum asperum.



105.

Phleum Boehmeri.



106.

Phleum Michelii.



107.

Phleum arenarium.



108.

Lacturus ovatus.



109.

Stipa pinnata.



unequal, pale, obtuse, slightly downy, the outer one largest, three or five-ribbed. *Styles* short. *Stigmas* feathery.

Habitat.—Rare. In sandy or chalk fields in Cambridgeshire and Norfolk.

Perennial; flowering in July.

This grass growing naturally upon a sandy soil, is but little productive of herbage, and that of an inferior quality, rendering it of no value for the purposes of cultivation.

5. *P. Michel'ii*, Allioni. (Fig. 106.) *Michelian Cat's-tail-grass*. Stem erect; panicle spiked, cylindrical; glumes lanceolate, taper-pointed, downy, ciliated at the keel.

English Botany, t. 2265.—English Flora, vol. i. p. 78.—Lindley, Synopsis, p. 301.—Hooker, British Flora, vol. i. p. 35.

Root fibrous. *Stem* erect, several arising from the same root, from twelve to eighteen inches high, smooth, leafy below. *Leaves* plane, roughish, tapering at the point. *Sheaths* rather long, upper ones slightly inflated. *Ligula* obtuse. *Inflorescence* a close spiked panicle, green, or frequently purplish, from one to three inches long. *Glumes* gradually tapering to a point, rough, with hairs, ribbed, the keel rigid at the point, strongly ciliated at the back. *Glumelles* unequal, obtuse, hairy, the outer one mostly five-ribbed, the inner smaller, often cloven at the extremity. *Styles* short. *Stigmas* feathery.

Habitat.—Rare. On the rocky parts of the high mountains of Clove, Angusshire, Scotland.

Perennial; flowering in July.

6. *P. arena'rium*, Linn. (Fig. 107.) *sea Cat's-tail-grass*. Stems several from the same root; panicle spiked, oblongo-ovate; glumes lanceolate acute, ciliated on the back, much longer than the abrupt glumella.

English Flora, vol. i. p. 79.—Hooker, British Flora, vol. i. p. 35.—*Phala'ris arena'ria*, t. 222.—*Achno'don arena'rius*, Lindley, Synopsis, p. 300.

Root of numerous long downy and simple fibres. *Stems* nearly erect, several from a single root, enveloped at the base and lower joints with thin membranous sheaths, branched and leafy, from three to six inches high. *Leaves* linear, thin, somewhat glaucous, rough on the edges, upper ones shorter, with long, smooth, striated, slightly inflated sheaths. *Ligula* lanceolate, decurrent. *Inflorescence* spicate, dense, rigid, from half an inch to an inch long, nearly cylindrical, green. *Glumes* lanceolate, terminating in a short *awn*, strongly keeled and ciliated, a rib on each side, green between the ribs and keel, the rest of the valves thin, pale, membranous, hairy on the edge, rough towards the apex. *Glumella* about one-third the length of the glumes, membranous, ob-

tuse, torn or crenated at the end, broad, ribbed with green, slightly hairy on the edge, as is also the narrower inner valve. *Anther* small, pale yellow. *Style* short. *Seed* ovate, attenuated at each end. After flowering, the plant remains for some time, and becomes bleached, and not unfrequently may be observed blowing about on the loose sand.

Habitat.—On sandy sea-coasts, frequent; sometimes it is found in sandy situations inland, as “on Swaffham and Newmarket heaths.”

Annual; flowering from May to July.

GENUS XXI. LAGURUS. LINN. *Hare's-tail-grass*.

GEN. CHAR. *Panicle* spiked, ovate. *Glumes* of two equal, fringed valves, terminating in feathery awns. *Glumella* of two unequal valves, external one the largest, with a dorsal awn, bifid at the apex; the lobes long, rough, awn-like.—Name from *λαγος*, a hare, and *ουρα*, a tail; from the resemblance which the spike has to the hare's tail.

1. *L. ovatus*, Linn. (Fig. 108.) *Hare's-tail-grass*. *Glumella* surrounded at the base externally with hairs, the internal valve with a small abortive feathery floret at its base.

English Botany, t. 1334.—English Flora, vol. i. p. 167.—Lindley, Synopsis, p. 299.—Hooker, British Flora, vol. i. p. 35.

Root fibrous. *Stem* from six to eighteen inches high, erect, or somewhat bending at the base, branched, leafy, round, smooth, shining, naked above, slender. *Leaves* broadly linear, acute, ribbed, downy on both sides. *Sheaths* striated, finely downy, upper one long, inflated in the upper part. *Ligula* oblong, abrupt, striated, embracing the stem. *Inflorescence* spicate, ovate, pale, remarkably soft and woolly, with numerous long protruding awns. *Glumes* equal, thin, membranous, spreading, single-ribbed, and, as well as its awn, fringed with long silky hairs; frequently a number of them, surrounding the base of the spike, are empty. *Glumella* on a short pedicle, of two unequal valves: the *outer* one with a geniculated awn, twisted in the lower part, tapering in the upper, and arising from about the middle of the valve; the *inner* one smaller, awnless, having at its base a small, finely fringed, abortive floret. *Anthers* yellow. *Style* short. *Stigmas* feathery. *Seed* oblong, loose in the unchanged *glumella*.

Habitat.—Very rare. Sandy fields near the sea, in Guernsey.

Annual; flowering in June.

This is one of our most beautiful and ornamental grasses, “the only known species of the genus,” and well worthy a place in the flower-garden; it would also form a very pretty addition to the feathery awns of the following and other species in decorations during the winter months.

GENUS XXII. STIPA. LINN. *Feather-grass.*

GEN. CHAR. *Panicle* erect, simple, or branched. *Glumes* of two nearly equal valves, longer than the glumella. *Glumella* of two involute valves, the external one bearing from its apex a long twisted awn, jointed at the base, and finally separating at the joint.—Name from *στύπη*, *silky*; from the glossy silk-like appearance of the panicle.

1. *S. penna'ta*, Linn. (Fig. 109.) *common Feather-grass.* Stems erect, several from the same root, leaves rigid, narrow, involute, striated, awn very long, feathery.

English Botany, t. 1356.—English Flora, vol. i. p. 162.—Lindley, Synopsis, p. 302.—Hooker, British Flora, vol. i. p. 36.—Sinclair, Hort. Gram. Woburn. p. 282.

Root fibrous, bearing several stems from one to two feet high, erect. *Leaves* very numerous, long, very narrow, rough, the edges so closely rolled inwards as to become setaceous, dark-green. *Sheaths* very long, and striated, especially the upper ones, which are dilated, and envelope the panicle when young, but when in flower it rises above it. *Ligula* oblong, obtuse. *Inflorescence* of few flowers. *Glumes* lanceolate, thin, acutely pointed; frequently by cultivation they are lengthened out into a long, fine, slightly feathery awn. *Glumella* of two valves, nearly of equal lengths, the external one largest, involute, and terminating in a jointed awn, about a foot long, twisted at the lower part, elegantly feathery in the upper, surrounded at the base with numerous short rigid bristles, pointing upwards; the inner much narrower, awnless, involute at the edges. *Glumellules* of two linear lanceolate scales. *Anthems* linear. *Stigmas* feathery. *Seed* pointed at each end, enveloped by the hardened glumella.

Habitat.—A very doubtful native; said to have been found, in Dillenius's time, in a little vale called Long Sleedale, Westmoreland.

Perennial; flowering in June.

GENUS XXIII. POLYPOGON. DESFONT. *Beard-grass.*

GEN. CHAR. *Panicle* contracted, somewhat spiked. *Glumes* of two equal awned valves. *Glumella* of two unequal valves, smaller than the glumes, the outer largest, obtuse, awned at the extremity. Name from *πολύς*, *many*, and *πύγων*, *a beard*; from the bearded appearance of the panicle.

1. *P. Monspelien'sis*, Desf. (Fig. 110.) *annual Beard-grass.* Awn rough, thrice as long as the rough hairy valves of the glumes, root fibrous, annual.

English Flora, vol. i. p. 86.—Lindley, Synopsis, p. 302.—Hooker, British Flora, vol. i. p. 36.—*Agrostis pani'cea*, English Botany, t. 1704.

Root fibrous, branched. *Stems* several from the same root, erect, about a foot high, smooth, leafy in the lower part. *Leaves* rather short, especially the upper ones, acute, flat, striated, the margins and ribs rough. *Sheaths* smooth, striated, the upper one slightly inflated. *Ligula* long, obtuse, ribbed, frequently torn. *Inflorescence* from one to two inches long, lobed, pale and silky from the long shining awns. *Glumes* very small, equal, shining from the white silky hairs with which it is more or less clothed: the *outer* valve cleft at the extremity, the awn arising from between the lobes; the *inner* scarcely cleft, the awn from the apex. *Glumella* much smaller than the glumes, external one the largest, bifid, with a short rough awn from between the lobes; internal smaller, awnless. *Anthers* small, as are also the *styles* and *stigmas*.

Habitat.—Rare. In moist pastures near the sea, in Hampshire and Essex; near Cley, Norfolk; Guernsey.

Annual; flowering from July to August.

2. *P. littoralis*, Sm. (Fig. 111.) *perennial Beard-grass*. Awn rough, about the length of the somewhat acute valves of the glumes; root perennial, with creeping underground stems.

English Flora, vol. i. p. 86.—Lindley, Synopsis, p. 302.—Hooker, British Flora, vol. i. p. 36.—*Agrostis littoralis*, English Botany, t. 1251.

Root with branched underground stems. *Stems* branched, smooth, procumbent, and bent at the joint, the lower ones sending out fibrous radicles, erect in the upper part. *Leaves* striated, rough on the edges, and also on both sides. *Sheaths* smooth, striated, scarcely inflated. *Ligula* oblong, striated, decurrent. *Inflorescences* two or more inches long, lobed, shining, purplish, dense, from the numerous small crowded florets. *Glumes* longer, more acuminate, less hairy, awn much shorter, than in the foregoing species: the *outer* valve is cleft at the extremity, with the awn arising from between the lobes; the *inner* tapering into its terminal awn. *Glumella* shorter than the glumes: *outer* valve bifid at the apex, with a short rough awn arising from between the teeth; the *inner* awnless. *Styles* short. *Stigmas* feathery. *Seed* small, ovate, enveloped in the glumella.

Habitat.—Rare. In muddy salt marshes, near Cley, Norfolk; in Essex; and near Woolwich.

Perennial; flowering in July and August.

This species "was long supposed peculiar to England, but it is now found in Germany."—Hooker. It is a very distinct species, formerly referred to the genus *Agrostis*.



110.

Polypogon Monspeliensis.



111.

Polypogon littoralis.



112.

Calamagrostis Epigejos.



113.

Calamagrostis lanceolata.



114.

Calamagrostis stricta.



115.

Agrostis canina.

GENUS XXIV. CALAMAGROS'TIS. ADANS. *Small Reed.*

GEN. CHAR. *Panicle* loose. *Glumes* two, longer than the glumelles. *Glumelles* of two unequal valves, surrounded with hairs at the base, the *outer* valve awned beneath the bifid apex.—Name from *καλαμος*, a reed, pipe, or straw, and *αγροστις*, *agrostis*, a genus of grasses.

1. *C. Epige'jos*, Roth. (Fig. 112.) *small Wood-reed*. *Panicle* erect, close; flowers crowded, unilateral; glumes subulate, their keel rough; awn of the external valve of the glumelles about as long as the hairs and glumes.

Lindley, Synopsis, p. 304.—Hooker, British Flora, vol. i. p. 36.—*Arun'do epige'jos*, Linn. English Botany, t. 403.—English Flora, vol. i. p. 169.

Root with creeping *underground stems*. *Stem* from four to six feet high, slender, finely striated, smooth in the lower part, roughish in the upper, leafy, frequently branched in the lower part. *Leaves* linear lanceolate, with a long narrow tapering point, roughish, especially beneath, glaucous. *Sheaths* close, striated, roughish, particularly the upper one. *Ligula* lanceolate, striated. *Inflorescence* an erect close panicle, from six to ten inches long; its branches rough, almost spiny, spreading when in flower; the spikelets numerous, crowded, turned to one side. *Glumes* nearly equal, long and narrow, purplish, rough on the keel. *Glumelles* unequal, thin, and membranous; *external valve* the largest, about half the length of the glumes, having two marginal ribs and a dorsal one, which terminates between the bifid apex in a roughish *awn*, nearly as long as the glumes; the *inner valve* smaller, entire, or bifid, with a single dorsal rib; surrounded at the base externally by a tuft of soft, shining, silk-like hairs, which are at first shorter than the glumes, but elongate as the seed ripens, and at length bear it away. The *seed* is small, attenuated at each end. *Stigmas* long, united at the base, feathery. *Anthers* pale yellow.

Habitat.—In moist shady situations. Dalrymple Wood, Ayr, Scotland.—*Mr. Goldie*. Near Roche Abbey, Yorkshire.—*R. D.* But most frequent in the South, as about London, Norwich, and Kent.

Perennial; flowering in July.

2. *C. lan'ceolata*, Roth. (Fig. 113.) *purple-flowered Small-reed*. *Panicle* erect, loose; glumes lanceolate, their keel smooth; external valve of the glumelles shorter than the glumes and hairs.

Lindley, Synopsis, p. 304.—Hooker, British Flora, vol. i. p. 37.—*Arun'do Calamagros'tis*, Linn. English Botany, t. 2159.—English Flora, vol. i. p. 170.

Root fibrous, woolly, a much smaller and slenderer plant than the last. *Stem* from three to four feet high, smooth, scarcely striated.

Leaves long, narrow, the edges incurved, rough on the under side, the upper more or less scattered with hairs. *Sheaths* long, finely striated, close, roughish on some plants. *Ligula* oblong, obtuse, torn, and generally decurrent. *Inflorescence* an erect spreading panicle, from three to six inches long; its branches slender, rough. *Spikelets* not so crowded as in the last, more open and spreading every way. *Glumes* lanceolate, a shining purple, green at the base, keel smooth; the whole valves, particularly in the upper part of the panicle, are hairy, while those in the lower part are quite smooth. *Glumelles* thin, membranous, unequal; *external valve* the largest, about half as long as the glumes, notched or torn at the extremity, with two or four lateral ribs and a keel, terminating in a very short rough awn; *inner valve* notched at the extremity, surrounded with hairs at the base, which are shorter than the glumes.

Habitat.—In moist woods and fenny situations. Lincolnshire, Cambridgeshire, Norfolk, &c. Not uncommon.

Perennial; flowering in June and July.

3. *C. stricta*, Lindl. (Fig. 114.) narrow *Small-reed*. Panicle erect; glumes broadly lanceolate acute, rough on the keel; about the same length as the glumelles; awn not extending beyond them; hairs about half as long; inner valve with an abortive hairy floret at its base.

Lindley, Synopsis, p. 304.—Hooker, British Flora, vol. i. p. 37.—*Arun'do stricta*, English Botany, t. 2160.—English Flora, vol. i. p. 173.

Root with creeping *underground stems*. *Stem* about two feet high; slender, rough, with fine erect teeth, especially in the upper part; striated, branched, and leafy below; the lower joints putting out numerous fibrous roots. *Leaves* long, narrow, finely pointed; striated rough, more so on the upper than the lower surface. *Sheaths* close, finely striated, somewhat rough. *Ligula* short, abrupt, notched or torn, those of the upper leaves longest. *Inflorescence* an erect close panicle, except when in flower; it is from two to four inches long, the branches partly whorled very rough. *Glumes* a light brown colour, darker at the base, smooth or finely hairy, broadly lanceolate, frequently torn at the extremity; keel not very prominent and more or less rough, the external valve sometimes with two lateral ribs. *Glumelles* about the same length as the glumes, membranous, brownish, surrounded at their base with a tuft of glossy hairs, scarce half as long as the valve when in flower, but becoming longer when in seed; the external valve bifid at the extremity jagged, the edges inflexed from the two lateral roughish ribs, a roughish dorsal awn arises from below the middle and extends a little beyond the extremity; the *inner valve* shorter than the outer, entire or slightly jagged at the extremity, with a solitary marginal rib on each side, and at the back is a channel, in which is embedded an abortive hairy awn-like valve about half its length. *Styles* distinct erect. *Stigmas* feathery.

Habitat.—In Scotland very rare.—White Muir Marsh, Forfar—*Mr. J. D. Hooker*; where it was first discovered by *Mr. G. Don*, “but it does not now exist there. Near Rescobie, Forfar.—*T. Drummond*.” Perennial, flowering in June.

This species, it will be observed, in many respects is nearly allied to *Amnophila arundinacea*, especially in the shortness of the hairs surrounding the base of the glumelles, and the abortive hairy valve, a structure which we have not found in either of the other species of this genus, but which is constant in this, and remains unaltered after long cultivation.

GENUS XXV. AGROS'TIS. LINN. *Bent-grass*.

GEN. CHAR. *Panicle* loose. *Glumes* two, unequal, longer than the glumelles. *Glumelles* two, unequal, the shorter valve largest, with or without an awn, the inner one sometimes absent.—Name from *αγρος*, a field; because the species are frequent in open situations.

1. *A. cani'na*, Linn. (Fig. 115.) *brown Bent-grass*. *Panicle* spreading, its branches long, slender, rough; glumes lanceolate, unequal; keel rough; glumella of one valve, with an awn from below the middle; stem decumbent and rooting.

English Botany, t. 1856.—English Flora, vol. i. p. 90.—Hooker, British Flora, vol. i. p. 37.—*Trichodium cani'num*, Schrader, Lindley, Synopsis, p. 303.—*Agrostis cani'na fascicula'ris*, p. 279.—*A. cani'na capil'laris*, p. 300.—*A. stric'ta*, p. 274.—*A. cani'na var. mu'tica*, p. 341. Sinclair, Hort. Gram. Woburn.

Root tough and fibrous, putting up numerous tufts of *stems*, which are decumbent at the base, and taking root from the joints, erect in the upper part, from one to three feet high; slender, smooth, faintly striated, leafy. *Leaves* more or less rough on both sides, short, narrow, the edges incurved, the radical ones generally so much so as to be setaceous, fleshy, and swollen at the base. *Sheaths* close, striated, smooth. *Lingula* lanceolate at length torn. *Inflorescence*, an erect panicle, its branches slender, rough, unequally whorled, erect close, spreading only when in flower. *Florets* erect. *Glumes* lanceolate, rough on the keel, spreading shining purplish, sometimes green, or a pale yellowish colour; outer valves somewhat larger than the inner. *Glumelles* of one lanceolate pale membranous valve, a little shorter than the inner valve of the glumes, entire, with a dorsal jointed awn arising from the middle of the valve, and two, sometimes four lateral ribs. Smith and Leers have occasionally found a second valve, but this we have not seen, nor yet has the accurate Dr. Hooker; sometimes at the base of the valve we have observed a few short silky hairs; the *awn* varies in length, sometimes it extends some length beyond the glumes, at others it is within or scarcely to be

seen, and occasionally absent, all which varieties may sometimes be seen in the same plant. *Anthers* yellow. *Seed* minute. *Stigmas* feathery.

Habitat.—Heaths, moors, and waste places frequent.

Perennial ; flowering in June and July.

This is an extremely sportive species, and from the absence of one of the valves of the glumella, (which from the above authorities, to which we may add that of Greville, in *Flora Edinensis*, p. 16) it appears by no means a constant character ; and upon the value of this character, Smith has remarked, that “such a partial deficiency could hardly afford a specific, much less a generic, distinction.” From this circumstance, however, Schrader has constructed his genus *Trichodium*, and it is adopted by Lindley. This grass abounds in hilly and poor pastures ; the leaves are more or less setaceous, depending upon the situation of their growth being dry or otherwise ; in dry situations the root leaves are remarkably so, but become thick and fleshy at the base ; by this provision there is formed, as it were, a reservoir of nutriment, and the plants are enabled to sustain themselves during long continued droughts, which often prevail in elevated situations. It is of no agricultural utility, affording but little nutriment, and one which the farmer may consider as a weed, and an indication that his land is greatly capable of improvement by suitable tillage.

2. *A. setacea*, Curtis, (Fig. 116.) *bristle-leaved Bent-grass*. Panicle erect, its branches short and close ; glumes lanceolate, slightly unequal, keel rough ; glumelles unequal, outer valve with a long jointed and twisted awn from near the base, inner minute ; radical leaves setaceous.

English Botany, t. 1168.—English Flora, vol. i. p. 91.—Hooker, British Flora, vol. i. p. 37.—*Trichodium setaceum*, Ræm. and Sch.—Lindley, Synopsis, p. 303.

Root with strong downy fibres. *Stems* from six to twelve inches, high, nearly erect, slender, smooth or slightly rough, mostly bearing two short leaves. *Leaves*, a pale glaucous green, roughish or downy ; the radical ones are erect, almost round, bristle shaped, (setaceous) from the rolling in of the edges, those of the stem broader, much shorter and having long smooth *sheaths*. *Ligula* thin lanceolate, mostly torn. *Inflorescence* an erect, short branched panicle, close, except when in flower it is spreading. *Glumes* lanceolate, pale purplish, tapering at the extremity, rough on the keel and edges, and slightly downy all over, outer valve somewhat longer than the inner. *Glumelles* very unequal, white thin and membranous, the outer one lanceolate obtuse, having four green nerves, the two lateral ones of which terminate in projecting points, the rough jointed and twisted *awn* arises from the base of the valve, and is about twice as long ; the inner valve



116.

Agrostis setacea.



117.

Agrostis Spica venti.



118.

Agrostis vulgaris.



119.

Agrostis alba.



120.

Catabrosa aquatica.



121.

Aira cristata.



is very small with a few white hairs at its base on each side. *Anther* purplish. *Styles* distinct.

Habitat.—A very local grass, almost confined to the south and south-west parts of England; as Hampshire, Devonshire, and Cornwall, perennial flowering in June and July.

This grass, it is observed by Dr. Hooker, "is now ascertained to be plentiful in Portugal, the native country of *Eri'ca cili'aris* and *Rese'da fruticulo'sa*, which Mr. Tozer has also had the good fortune to find truly wild, in Cornwall; affording an additional proof, if any were needed, of the great mildness of the climate in that district of England, and of its proximity in that respect to the more southern parts of Europe."

3. *A. spi'ca ven'ti*, Linn. (Fig. 117.) *silky Bent-grass*. Panicle loosely spreading; glumes lanceolate, unequal, rough on the keel; glumella of two unequal valves, the external acutely bifid, and between the lobes a long straight rough awn; the inner one smaller, with the rudiment of a second floret at its base.

English Botany, t. 951.—English Flora, vol. i. p. 89.—Hooker, British Flora, vol. i. p. 38.—*Anemagros'tis spi'ca ven'ti*, Lindley, Synopsis, p. 304.

Root fibrous. *Stems* sometimes numerous from the same root, from one to three feet high, erect, repeatedly jointed, and frequently bent at the base, leafy, smooth. *Leaves* linear, striated, slightly downy on the upper side, rough on the under, upper ones short, mostly involute. *Sheaths* long, striated, smooth. *Ligula* long, lanceolate, frequently torn. *Inflorescence* a loose, ample, repeated branched panicle, gracefully leaning on one side, and elegantly waving its glossy silk-like florets with every passing breeze; its branches are very slender, repeatedly subdivided, each terminated with a lanceolate floret. The *glumes* spreading when in flower; outer one the longest, smooth except on the keel, frequently tinged with purple; the inner one shorter, of a thinner texture, except the roughish keel. *Glumella* of two valves, the outer largest, hairy at the base, rough towards the apex, terminating in two rather long acute lobes, having between them a long, straight, rough, shining awn; the inner smaller, enwrapped in the external valve, and bearing at its base the rudiment of a second floret. *Styles* feathery. *Seed* very small, ovate, smooth.

Habitat.—Rare. In sandy fields which are occasionally flooded. In several parts of Norfolk, near Kingston-upon-Thames, and Camberwell; Warrington, Lancashire.

Annual; flowering in June and July.

This beautiful grass, with its ample and gracefully spreading panicle, does not appear to have been applied to any useful or agricultural purposes.

4. *A. vulga'ris*, Withering, (Fig. 118.) *fine Bent-grass*. Panicle loose, its branches smoothish, diverging; glumes nearly equal; glumelles with the outer valve three-ribbed; ligula abrupt, extremely short.

English Botany, t. 1671.—English Flora, vol. i. p. 92.—Lindley, Synopsis, p. 303.—Hooker, British Flora, vol. i. p. 38.—Sinclair, Hort. Gram. Woburn. p. 269.

β. arista'ta, outer valve of the glumelles bearing an awn.

Agros'tis cani'na, Withering.—*A. vulga'ris cani'na*, Sinclair, Hort. Gram. Woburn. p. 271.

γ. pumil'a, whole plant much smaller, scarcely three inches high.—Lightfoot, Scot. p. 1081. fig. in title-page.

Root tufted, putting out roots and branches from the lower joints. *Stems* mostly numerous, ascending, from one to two feet high, leafy, slender, finely striated, smooth below, roughish above. *Leaves* linear, tapering at the point, rough. *Sheaths* long, close, striated, smooth. *Ligula* extremely short and truncate, the upper one the longest, but never so long as in the following species. *Inflorescence* a loose branched panicle, the rachis nearly smooth, the branchlets more or less hispid, slender, capillary. *Glumes* lanceolate, nearly equal, shining, mostly purple, smooth except on the keel. *Glumelles* of two unequal pale membranous valves; the *outer* scarcely as long as the glumes, three-nerved, which terminate in three teeth, awnless, or with a dorsal awn of uncertain length arising from beneath the middle of the valve when it is the variety *β.*, but not unfrequently we have seen on the same specimen some florets with awns and others without; *inner* valve about half the size, two-nerved, bifid. Dr. Hooker mentions his having specimens of this species bearing the rudiment of a second flower upon a rather long footstalk, in the same calyx. It is said to be found in a viviparous state in moist shady situations. *Anthers* scarcely project beyond the glumes. *Styles* separate. *Stigmas* feathery.

Habitat.—In pastures, and dry waste places, very common.

Perennial; flowering from July to August.

The value of this grass for agricultural purposes is very trifling; its best recommendation is its early produce, but this is far from being abundant, and the nutritive matter which it contains is inconsiderable. It thrives best on a sandy soil.

5. *A. al'ba*, Linn. (Fig. 119.) *Marsh Bent-grass*. Panicle loose, its branches rough; glumelles with the outer valve five-ribbed; ligula oblong.

English Botany, t. 1189.—English Flora, vol. i. p. 93.—Lindley, Synopsis, p. 303.—Hooker, British Flora, vol. i. p. 39.—*A. repens*, p. 344; *A. stolonifera arista'ta*, p. 345; *A. stolonifera angustifo'lia*, p. 346; *A. palus'iris*, p. 348; *A. stolonifera latifo'lia*, p. 225, is the celebrated Fiorin grass. Sinclair, Hort. Gram. Woburn. p. 342.

Root fibrous. *Stems* smooth, frequently long, decumbent and spreading in the lower part, putting out roots and numerous stems from the joints. *Leaves* flat, broader, rougher, and stouter than in the last species. *Sheaths* striated, smooth, or roughish, particularly in the upper parts. *Ligula* oblong, obtuse, mostly torn, ribbed, smooth, or minutely downy. By this character all the varieties are essentially distinguished from the above. *Inflorescence*, a loose branched panicle, somewhat contracted from two to six inches long; the rachis smooth in the lower part, the branches rough and angular. *Glumes* nearly equal, lanceolate smooth, except on the keel, shining, green or purplish. *Glumelles* unequal, pale, thin, membranous, the outer valve largest lanceolate five nerved, which terminate in more or less distinct teeth, the inner much smaller, two nerved, and bifid. Dr. Hooker, who has bestowed much labour upon this grass, remarks that "in some there is a short awn at the base of the outer valve of the corolla (*glumella*), this constitutes the *A. compressa*, Willdenow, and sometimes the flowers are viviparous, which is the *A. sylvatica*, Linn. I believe all are now agreed that *A. stolonifera* of authors is the same as *A. alba*. The famous Fiorin grass of Dr. Richardson and the Irish agriculturists is what I have called *A. alba*, as I ascertained by the aid of specimens gathered in the company of Dr. Richardson himself. I know not of any British awnless *Agrostides*, which may not be reduced either to *A. vulgaris* or *A. alba*. The two species are indeed very closely allied."

Habitat.--In dry pastures, road sides, and waste places, abundant.

Perennial, flowering from June to August.

The utility of this grass for the purposes of cultivation, is the early period at which it furnishes herbage in the spring; it also is one of the latest in autumn: the latter property renders it one of the most valuable grasses in permanent pastures, a part of which it ought always to form, though from the spreading habit of the plant, which has been compared to that of the strawberry, it should not constitute so large a proportion of the mixture as some other species. This grass is not so advantageously cultivated by itself for the purpose of pasturing, as it is making hay, on account of the peculiar manner of its growth; and for when in this way cultivated, it is necessary, to obtain the full amount of profit, that the plants should be kept free from weeds; and as its spreading roots in a considerable degree exhaust the surface of the soil, a top dressing of manure will be found necessary. This grass, which was found from seven to ten feet long, constituted a part of the hay grown in the neighbourhood of Salisbury, an account of which is published in the Linnæan Transactions: two acres and a half of land, according to this account, produced the astonishing quantity of ten tons of hay in one year. The creeping under-ground stems contain much nutritious matter and sugar, from which circumstance, in some parts of France and Italy, they are collected as food for horses, and from the presence of the saccharine matter it has been proposed to ferment them, and brew table-beer.



122.

Aira coespitosa.



123.

Aira alpina.



124.

Aira flexuosa.



125.

Aira carvophylla.



126.

Aira praecox.



127.

Aira canescens.

ferent to the present genus, and to which there does not appear any obvious reference.

* *Panicle close. Glumella awnless.*

1. *A. cristata*, Linn. (Fig. 121.) *crested Hair-grass*. Panicle spiked, florets longer than the glumes, leaves hairy.

English Botany, t. 648.—English Flora, vol. i. p. 101.—Hooker, British Flora, vol. i. p. 39.—Sinclair, Hort. Gram. Woburn. p. 304.—*Airoch'loa cristata*, Lindl., Synopsis, p. 207.

Plant forming close tufts. *Root* fibrous, downy. *Stem* from six to twelve inches high, simple, bent in the lower part, erect in the upper, and thickly clothed with short white down, leafy and smooth below. *Leaves* linear, glaucous, smooth or downy. *Sheaths* close, striated, more or less downy, upper ones long. *Ligula* very short, crenate fringed. *Inflorescence* a close, lobed, spiked panicle, from one to three inches long, its branches shorter than the glumes. *Glumes* unequal, lanceolate, acute, smooth or slightly downy, pale, thin, compressed, with a roughish keel. The *lower floret* sessile, the *upper* on a short stalk, which is smooth or downy. *Glumelles* equal; the *outer* one pale green, with membranous edges, and mostly three-ribbed; the *inner* white, roughish, thin, membranous, with two ribs, which terminate in acute points, between which it is cleft, and from them the edges of the valve fold inwards. *Anthers* yellow. *Stigmas* feathery.

Habitat.—In dry, chiefly elevated pastures, most frequent in the north, sometimes on old walls, not very common.

Perennial; flowering from June to August.

This grass thrives well upon sandy land, or even upon stronger lands of a clayey nature, but is not much relished by cattle, and is mostly avoided by them when other grasses can be obtained: this is probably owing to the softness of the leaves, independent of which, however, it does not appear to possess any advantage over many of the other grasses, which the cattle prefer.

** *Panicle loose. Glumelles awned.*

2. *A. caespitosa*, Linn. (Fig. 122.) *turfy Hair-grass*. Panicle spreading, its branches slender, roughish; florets rather longer than the glumes, hairy at the base, the outer valve with a straight awn about as long as itself, and proceeding from near the base; leaves long.

English Botany, t. 1453.—English Flora, vol. i. p. 102.—Hooker, British Flora, vol. i. p. 40.—Sinclair, Hort. Gram. Woburn. p. 304.—*Deschampsia caespitosa*, Tindley, Synopsis, p. 309.

Plant forming large thick tufts. *Root* fibrous, long, tough. *Stems* from two to four feet high, erect, smooth and shining, except at the top, leafy, particularly in the lower part. *Leaves* very long, narrow,

linear, flat, ribbed, rough on the edges and upper side, with very sharp teeth pointing towards the extremity, smooth beneath. *Sheaths* close, short, striated, smooth. *Ligula* lanceolate, three ribbed, smooth, often torn. *Inflorescence* a large slender widely spreading panicle, its branches fine, hair-like, roughish, and angular. *Glumes* unequal, lanceolate, silvery-grey, green or purplish, pale and membranous on the edges, the *outer* valve smallest, with a roughish keel, the *inner* with a roughish keel and two lateral ribs. *Florets* rather longer than the glumes, with a few white silky hairs at the base, the *lower* one sessile, the *upper* on a short hairy stalk, the valves ovate, obtuse, erose, the *outer* generally with five short teeth, and arising from near the base is a straight roughish awn about as long as the valve, the *inner* bifid; at the base of the inner valve of the upper floret, there is generally a short hairy stalk, on abortive floret. *Anthers* yellow or purplish. *Stigmas* short, feathery.

It is sometimes found with viviparous flowers.

Habitat.—In moorish and shady situations, the borders of woods, marshes, &c., common.

Perennial; flowering from June to August.

The coarseness of this grass, and the small proportion of nutritive matter that it contains, renders it totally unfit for any agricultural purposes; cattle never eat it, even when in a young state, but from great necessity. It forms dense unsightly tufts in pastures, which are called by farmers, hassocks, bulls' faces, &c., are difficult to be extirpated, and can only be retarded in their growth by early and frequent mowing; to remove them entirely, the only effectual mode, according to Sinclair, is to first pare and burn the surface of the land, and by making proper drains, to correct, as much as possible, the tenacious nature of the soil; in this case surface drains are as necessary as those termed hollow.

3. *A. alpi'na*, Linn. (Fig. 123.) *smooth alpine Hair-grass*. Panicle rather close, its branches smooth; florets as long as the glumes, hairy at the base, the outer valve with a straight awn proceeding from about the middle, and extending a little beyond the extremity; leaves short.

English Flora, vol. i. p. 103.—Lindley, Synopsis, p. 308.—Hooker, British Flora, vol. i. p. 46.

Root fibrous. *Stems* from twelve to eighteen inches high, quite smooth, enveloped to the top in the sheaths. *Leaves* short, linear, ribbed rough on the upper side, smooth beneath. The edges rolled so firmly inwards that they appear awl shaped. *Sheaths* long, smooth, striated. *Ligula* oblong, obtuse, mostly torn. *Inflorescence* an erect, rather small smooth branched panicle, much smaller and far less spreading than the last, except when in a viviparous state, which is mostly the case, then it is more drooping and spreading. *Glumes* lanceolate, somewhat unequal, smooth. *Florets* two, surrounded at the

base with a tuft of fine hairs, mostly sessile, the partial stalk of the upper one when present is very short and quite smooth. *Glumelles* lanceolate acute, greenish, mostly enlarged into a bud. *Awn* arising from about the middle of the outer valve, and extending a little beyond it.

Habitat.—Rare, on high mountains in Scotland and Wales.

Perennial; flowering in June and July.

4. *A. flexuosa*, Linn. (Fig. 124.) *waved Hair-grass*. Panicle loose, spreading when in flower; florets as long as the glumes, hairy at the base; awn arising from near the base of the outer valve, and much longer, rough twisted and jointed; leaves bristle shaped.

English Botany, t. 1519.—English Flora, vol. i. p. 105.—Lindley, Synopsis, p. 398.—Hooker, British Flora, vol. i. p. 40.—Sinclair, Hort. Gram. Woburn. p. 279.

Root long and fibrous, sometimes woolly. *Stem* from one to two feet high, erect, slender, smooth, leafy below. *Sheaths* close, striated, roughish, upper ones very long, the lower short. *Ligula* oblong acute, frequently torn. *Leaves* very narrow, bristle shaped, roughish, the lower long and numerous, the upper very short. *Inflorescence* a loose branched panicle, erect, but spreading when in flower, its branches long, slender, hair like, waved, roughish, especially its ultimate divisions. *Spikelets* few. *Glumes* unequal, broadly lanceolate, thin, membranous, smooth except on the keel, shining, of a yellowish copper colour, the outer one frequently ribbed. *Florets* about the length of the glumes, surrounded at the base with a tuft of shining white hairs, the upper one on a short hairy stalk. *Glumelles* lanceolate, unequal, smooth, greenish copper-colour, with membranous edges; the *outer* valve with three slight ribs, and a twisted jointed awn arising from near its base, and extending often considerably beyond the extremity; *inner* valve bifid at the extremity, with two lateral roughish ribs, from which the edges are inflexed, and enwrap the lanceolate *glumellules* supporting its small brown seed. *Anthers* yellow or purplish. *Stigmas* feathery.

Habitat.—Waste sandy heaths, moors, and hilly situations, abundant.

Perennial; flowering in July and August.

For the purpose of cultivation, this grass possesses but little to recommend it. On its natural sandy or heathy soil it is most productive, and will be found to form a part of those grasses which are most advantageously sown for the improvement of such lands. Like many other mountainous plants, it is liable to great variation, depending upon the elevation, the aridness, or humidity of the situation in which it has grown.

5. *A. caryophyllæa*, Linn. (Fig. 125.) *silvery Hair-grass*. Panicle spreading; florets shorter than the glumes, scarcely hairy at the base; awn arising from below the middle of the outer valve; jointed, and about as long again; leaves bristle-shaped.

English Botany, t. 812.—English Flora, vol. i. p. 106.—Lindley, Synopsis, p. 308.—Hooker, British Flora, vol. i. p. 40.

Root of many slender branched fibres. *Stem* from two to twelve inches high, slender and shining, smooth and leafy on the lower part, roughish above. *Leaves* few, short, slender, bristle-shaped, the upper ones very short, with long, rough, striated, slightly swelling, and sometimes purplish *sheaths*. *Ligula* lanceolate, embracing the stem, large compared to the size of the leaves, the root leaves longest, soon withering. *Inflorescence* a loose spreading panicle, its branches fine, shining, and hair-like, smooth in the lower part, roughish towards the extremities. *Spikelets* small, a shining silvery grey, sometimes purplish, not very numerous. *Glumes* nearly equal, lanceolate, longer than the florets, the edges white and pellucid, frequently uneven, green at the base, the keel mostly rough. *Florets* sessile, roughish, with minute shining points, and a few short glossy hairs at the base; *external valve* the largest, lanceolate, with a long narrow bifid point, and arising from near the base is a jointed dorsal *awn*, twisted in the lower part, roughish in the upper, and about as long again as the valve; the *inner valve* closely embraced by the inflexed edges of the outer, is thin, pale, and membranous. *Anthers* small, yellow. *Stigmas* feathery. *Seed* minute.

Habitat.—Sandy fields, heaths, and gravelly places, frequent.

Perennial; flowering in June and July.

This is an early grass, and greedily eaten by sheep; but, from the small quantity of herbage which it produces, and the dry situations in which it delights to grow, it is soon withered up, and is consequently a comparatively valueless pasture grass, as is also the following; and they do not possess any properties by which any advantage could be obtained by their cultivation.

6. *A. præcox*, Linn. (Fig. 126.) *early Hair-grass*. Panicle close, somewhat spiked; florets about as long as the glumes, scarcely hairy at the base; awn arising from below the middle of the outer valve, jointed, and about as long again; leaves bristle-shaped.

English Botany, t. 1296.—English Flora, vol. i. p. 106.—Lindley, Synopsis, p. 308.—Hooker, British Flora, vol. i. p. 41.

Root of many slender branched fibres. *Stem* erect, from one to four inches high, several from the same root, simple, slender, smooth and shining above, roughish about the joints, leafy in the lower part. *Leaves* few, short, narrow, blunt, bristle-shaped, the lower ones soon withering. *Sheaths* angular, ribbed, mostly roughish, somewhat inflated. *Ligula* lanceolate, closely embracing the stem, very large. *Inflorescence* a short, erect, close, somewhat lobed panicle. *Spikelets* few, a pale silvery green. *Glumes* equal, lanceolate, roughish, with minute points, the keel rough. *Florets* sessile, about as long as the glumes, surrounded at the base with a few short white shining hairs, and roughish towards the extremity, with shining points; the *outer valve* lanceolate, with a long narrow pale bifid point, and a dorsal *awn* arising

from below the middle, which is twisted in the lower part, jointed in the middle, and about as long again as the valve. *Anthers* small, pale yellow. *Stigmas* feathery.

Habitat.—In similar situations to the last, but not so frequent.

Annual; flowering in May and June.

*** *Panicle contracted. Awn club-shaped.*

7. *A. canes'cens*, Linn. (Fig. 127.) *grey Hair-grass*. Panicle rather dense; florets shorter than the glumes; awn club-shaped, arising from below the middle of the outer valve, the length of the glumes; leaves bristle-shaped.

English Botany, t. 1190.—English Flora, vol. i. p. 105.—Hooker, British Flora, vol. i. p. 41.—*Corynephorus canes'cens*, Beauv. Lindley, Synopsis, p. 307.

Root with long slender white fibres. *Stem* slender, from four to eight inches high, bent in the lower part, erect in the upper, where it is smooth and shining, below roughish, and thickly clothed with short, rigid, bristle-shaped, roughish, glaucous *leaves*, the upper ones very short, with long, striated, inflated, and roughish *sheaths*. *Ligula* lanceolate, mostly torn, and decurrent. *Inflorescence* a close erect panicle, about an inch long, spreading when in flower, its branches short and roughish. *Spikelets* small, green or purplish. *Glumes* somewhat unequal, lanceolate, smooth, thin, and membranous on the edges, longer than the florets, the keel roughish; the *florets* thin and delicate, the lower one sessile, the upper elevated on a hairy stalk, half the length of the valves; the *outer valve* largest, lanceolate, the back channelled, in which is imbedded the lower part of the *awn*, which arises from near the base of the valve, and generally when in seed as long again, but previous to this it is not so long. The structure of the awn is remarkable: the lower part, which is generally the length of the valve, is rather thick, brown, and twisted; the extremity is jointed, and surrounded by a few short rigid pale bristles, from the centre of which arises a thin delicate process mostly about as long again, gradually thickening towards the extremity; this part is highly hygrometrical, moving with the least moisture applied by breathing upon it. *Anthers* dark purple. *Stigmas* feathery.

Habitat.—On the sandy sea-coasts of Norfolk and Suffolk; plentiful near Yarmouth.

Perennial; flowering in July.

The form of the awn is considered by Beauvis sufficient to constitute this a distinct genus, in which opinion he is followed by Lindley. The name, *Corynephorus*, by which it is distinguished, differs only in its termination from a genus of *Algæ*, and may lead to some confusion. Perhaps the Latin word *Claviger*, which has the same meaning, (should both genera be adopted by succeeding botanists,) may be substituted for one or other of them,

GENUS XXVIII. HOLCUS. LINN. *Soft Grass.*

GEN. CHAR. *Panicle* loose. *Spikelets* two-flowered. *Glumes* nearly equal, longer than the florets; lower floret perfect and awnless; upper with stamens only, and awned. *Fruit* coated with the indurated glumelles.—Named ὄλκος, from ἔλκω, to draw or extract; on account of the property which this, or some other grass formerly bearing this name, was supposed to possess in the drawing of wounds and thorns from out the flesh.

1. *H. mol'lis*, Linn. (Fig. 128.) *creeping Soft-grass*. *Glumes* acuminate; upper floret with a jointed awn extending beyond the glumes; joints of the stem with tufts of hairs; root with creeping underground stems.

English Botany, t. 1170.—English Flora, vol. i. p. 108.—Lindley, Synopsis, p. 306.—Hooker, British Flora, vol. i. p. 42.—Sinclair, Hort. Gram. Woburn. p. 165.

Root fibrous, downy, with creeping underground stems, which put out whorls of fibres from their numerous joints. *Stem* from one to three feet high, bent at the base, smooth and finely striated, leafy joints clothed with thick short hairs, and sometimes the whole plant is slightly downy. *Leaves* linear lanceolate, roughish. *Sheaths* striated, somewhat inflated roughish, the upper one much the longest. *Ligula* obtuse, mostly turn. *Inflorescence* an erect branched panicle, close before flowering, afterwards spreading, its branches slender and downy. *Spikelets* numerous, pale green, sometimes purplish. *Glumes* nearly equal lanceolate, with a tapering point longer than the florets, the outer valve with a strong green roughish keel, the inner with a keel and two lateral ribs. *Florets* a pale green, ovate lanceolate, the lower one nearly sessile, smooth and shining, sometimes with a few scattered hairs, containing both stamens and pistils, the upper one elevated on a short hairy stalk, surrounded at the base with a tuft of short white shining hairs, generally more hairy, containing stamens only, the outer valve with a jointed awn arising from near the extremity and extending beyond the glumes. *Anthers* yellow. *Seed* small, inclosed in the hardened glumelles.

Habitat.—Pastures, hedges, and waste sandy places, frequent.

Perennial; flowering in July.

This plant, from the experiments of Sinclair, contains a large portion of nutritive matter, but the small quantity and lateness of herbage which it produces, together with the poor sandy soil in which it delights to grow, renders it one of the least valuable pasture grasses, and especially as cattle will never eat it unless from extreme necessity. The long spreading underground stems, are extremely troublesome and difficult to be expelled from light arable lands when they have once established

themselves in it. They, however, contain much nutritive matter, and as Sinclair observes, much relished by pigs.

2. *H. lana'tus*, Linn. (Fig. 129.) *Meadow Soft-grass*. Glumes unequal, somewhat obtuse, the keel terminating in a short point, upper floret with a curved awn included within the glumes; joints of the stem without tufts of hairs; root simply fibrous.

English Botany, t. 1169.—English Flora, vol. i. p. 107.—Lindley, Synopsis, p. 305.—Hooker, British Flora, vol. i. p. 42.—Sinclair, Hort. Gram. Woburn. p. 163.

Root of numerous, strong downy fibres. *Stems* numerous, erect, single, from one to three feet high, smooth, or more generally clothed with thick short down. *Leaves* linear lanceolate, striated, downy on both sides. *Sheaths* long, striated, soft and downy. *Ligula* short, blunt. *Inflorescence* an erect branched spreading panicle, larger than the above species, a pale green or more generally purplish, its branches slender, repeatedly divided, and clothed with soft hairs. *Glumes* dotted or downy, unequal, the *outer* valve smallest, keeled obtusely pointed, the *inner* obtuse with two strong lateral ribs and a keel, which terminates in a short rigid point. *Florets* shorter than the glumes; pale, smooth and shining, the *upper* one on a short smooth stalk, containing stamens only, the *outer* valve largest, with a short curved smooth awn arising from near the extremity, and included within the glumes, the *lower* floret largest, containing both stamens and pistils. *Anthers* yellow or purple. *Seed* coated with the hardened glossy glumelles.

Habitat.—In meadows, pastures, by the side of hedges and woods, common.

Perennial; flowering in June and July.

This very common grass, like the last, is of little value for the purposes of cultivation, and is equally disliked by cattle in its succulent state as well as when made into hay, a circumstance which appears to depend upon its soft woolly nature; and as Sir H. Davy has observed, the bland mucilaginous taste of the nutritive matter of this grass, is not such as is found to be contained in those kinds which are most liked by cattle, which are those of a subacid or saline nature; and he further observes, that this grass might probably be made more palatable to cattle by being sprinkled over with salt,—a practice which ought to be followed by all persons whose meadows or fields contain any great proportion of this grass.

GENUS XXIX. ARRHENATHERUM. BEAUVIS. *Oat-like Grass*.

GEN. CHAR. *Panicle* loose. *Glumes* two, unequal, two-flowered; *lower* floret with stamens only, and a long jointed awn arising

from near the base of the outer valve; the upper perfect, and the outer valve with a short straight bristle from near the apex.—Name from *αρσεν*, a male, and *αβη*, the awn or beard; in reference to the male floret bearing an awn.

1. *A. avenaceum*, Beauv. (Fig. 130.) common Oat-like grass.

Lindley, Synopsis, p. 305.—Hooker, British Flora, vol. i. p. 42.—*Holcus avenaceus*, Scop. English Botany, t. 813.—English Flora, vol. i. p. 109.—Sinclair, Hort. Gram. Woburn. p. 169.—*Avena elatior*, Linn. Hudson.—*Arrhenatherum bulbosum*, Dumortier, Lindley.

Root of numerous strong woolly fibres. *Stem* erect, from one to three feet high, the base frequently swollen into knots or tubers, which are smooth or hairy, the joints in the lower part of the stem are generally numerous and they also are frequently swollen, and are more or less hairy, the stem smooth, leafy. *Leaves* linear lanceolate, rough above, smooth beneath. *Sheaths* striated, smooth, long, especially the upper ones. *Inflorescence* a long loose spreading panicle, its branches roughish, of various lengths, arising in half whorls, and mostly drooping on one side. *Spikelets* numerous. *Glumes* unequal, smooth, thin membranous, the upper valve largest lanceolate, three ribbed, the lower much smaller, single ribbed. *Florets* two surrounded at the base with a tuft of short white bristles, the lower sessile, neuter, bearing stamens only; the outer valve lanceolate, roughish, six-ribbed, bifid at the apex, thin and membranous on the edges, and arising from above the base is a long jointed rough awn, twisted in the lower part, tapering above; inner valve thin, membranous, bifid at the apex, the margins inflexed from the two lateral greenish and hairy ribs; the upper floret on a short hairy footstalk, outer valve five-ribbed, the dorsal one terminating between the bifid apex in a short straight rough awn, the margins membranous. *Anthers* mostly pinkish. *Stigmas* long, feathery. *Seed* invested by the hardened glumelles.

Habitat.—Hedges, pastures, and waste places, common.

Perennial; flowering in June and July.

This grass, the only known species of the genus, has the habit of, and in natural affinity is nearly allied to, *Avena*. The enlarged joints and tuberos base of the stems vary, as well as their hairiness according to the more or less humid situation in which they have grown. It is a grass of considerable agricultural value, is eaten by all kinds of cattle, and ought to form a part of all permanent pastures, though not in too great a proportion, as, according to the experiments of Sinclair, it contains too large a proportion of bitter extractive and saline matter; the quantity of herbage which it produces during the whole summer, is very considerable. In dry, sandy arable lands, the tubers spread about, and it becomes a very troublesome weed.



128.

Holcus mollis.



129.

Holcus lanatus.



130.

Arrhenatherum avenaceum.



131.

Panicum Crus-galli.



132.

Setaria verticillata.



133.

Setaria viridis.



GENUS XXX. PANICUM. LINN. *Panick Grass.*

GEN. CHAR. *Panicle* erect, compound. *Glumes* two, unequal, two-flowered; the lowest valve smallest, pointed; the upper concave pointed or awned. *Florets* dissimilar. *Glumelles* of the fertile floret two, cartilaginous, the external one concave, the internal plane; *glumelles* of the neuter or male floret one or two; the external membranous, pointed, or awned; the inner smaller, often absent. Name from *panis*, *bread*; the seeds of some of the species of this genus, it is thought, having been earliest used for the making of bread.

1. *P. Crus'-gal'li*, Linn. (Fig. 131.) *loose Panick-grass*. Spikes of the panicle alternate, mostly simple; flowers imbricated, unilateral; rachis rough; leaves without ligulæ.

English Botany, t. 876.—English Flora, vol. i. p. 100.—Hooker, British Flora, vol. i. p. 43.—*Echino'chloa Crus'-gal'li*, Lindley, Synopsis, p. 305.

Root fibrous. *Stems* several from the same root, about two feet high, branched and leafy in the lower part, smooth, striated. *Leaves* broad, lanceolate, smooth, except on the edges, which are sometimes waved or crenated. *Sheaths* large, compressed, smooth, and striated. *Ligula* absent. *Inflorescence* a compound spiked panicle, the lower spikes rather distant; the upper crowded, shorter tufted; rachis compressed, rough edged, mostly zigzag. *Glumes* unequal, the inner largest, concave ribbed, pointed or awned and scattered with short rigid bristles; the outer smaller, thinner, partly embracing the other at the base, pointed at the extremity. *Glumelles* of the *perfect* floret, two, obscurely ribbed, smooth and shining; the lower or outer one concave, downy at the apex, the sides inflexed; the upper or inner one plane, the sides slightly inflexed, pointed. *Glumelles* of the *imperfect* floret very unequal, the outer one large concave, thin, membranous, ribbed, the edges scattered with bristles, the sides inflexed, terminated with a rough awn, about as long as itself or shorter; this valve has a great resemblance to the outer glume, for which it is not surprising it should have been mistaken; the inner one much smaller, sometimes wanting, very thin, plane pointed or notched at the apex; this floret is generally empty, sometimes it contains stamens only. *Stamens* about the length of the glumelles. *Anthers* small. *Stigmas* feathery. *Seed* flat, truncated, remaining attached to the hardened glumella.

Habitat.—Rare, in fields in the vicinity of London, "but probably introduced."—Hooker.

Annual; flowering in July.

GENUS XXXI. SETARIA. BEAUV. *Bristle Grass.*

GEN. CHAR. *Panicle* spiked, cylindrical. *Glumes* two, unequal, two-flowered; the *spikelets* supported on short branched pedicles, two or three of which are surrounded by a *bristly involure*. *Florets* dissimilar. *Glumelles* of the perfect floret two, unequal, cartilaginous; *glumelles* of the neuter or male floret one or two, membranous; the smaller one sometimes absent.—Name from *Seta*, a *bristle*, on account of the bristly appearance of the spikes.

1. *S. verticillata*, Beauv. (Fig. 132.) *rough Bristle grass*. *Panicle* spiked, lobed in the lower part, branches whorled, bristles of the involure, several, prominent, rough, with reversed teeth.

Lindley Synopsis, p. 309.—Hooker, British Flora, vol. i. p. 43.—*Panicum verticillatum*, Linn.—English Botany, t. 875.—English Flora, vol. i. p. 98.

Root fibrous. *Stems* one or several from the same root, from eight inches to two feet high, erect, leafy, striated, smooth below, angular at the top and rough, with sharp erect teeth. *Leaves* rather broad, lanceolate, taper pointed, rough on both sides, the edges very rough, especially near the base where it not unfrequently has a narrow pale cartilaginous border, and one edge of the leaf waved. *Sheaths* long, striated, smooth. *Ligula* a tuft of short hairs, which are continued, but scattered for some distance on the edge of the sheath. *Inflorescence* compound, from one to three inches long, erect, cylindrical, irregularly lobed, the branches short, rough, from three to six in a whorl, each bearing several flowers, every pair of which is subtended by about two long rough bristles. *Glumes* very unequal, thin, membranous, with greenish ribs, the lower valve the smallest, about half the length of the upper, and shortly pointed, the upper valve oval, concave, many ribbed, as long as the florets, surrounded at the base by the outer valve. *Florets* generally in pairs. *Glumelles* of the perfect floret of two cartilaginous unequal valves, shining and beautifully impressed with close dotted leaves; the outer concave with inflexed edges, enclosing the plane inner valve. *Glumelles* of the imperfect floret unequal, thin, membranous; the outer large ribbed, concave, greatly resembling the inner glume; the inner plane very thin, smaller, or absent. *Anthers* short, cloven. *Stigmas* feathery. *Seed* ovate, dark-coloured, enclosed in the hardened glumelles, which are enveloped by the persistent glumes.

Habitat.—Rare, between London and Putney, Battersea fields, and near Norwich; “probably not indigenous.”—Hooker.

Annual; flowering from July to August.

2. *S. viridis*, Beauv. (Fig. 133.) *Green Bristle grass*. *Panicle* spiked, continuous bristles of the involure, more numerous, and rough, with erect teeth.

Lindley, Synopsis, p. 309.—Hooker, British Flora, vol. i. p. 43.—*Panicum vi'ride*, Linn. English Botany, t. 875.—English Flora, vol. i. p. 98.

This plant is generally smaller than the above species, which it greatly resembles. It would appear, the only character of distinction upon which reliance can be placed is the *bristles* of the involucre having the small teeth with which they are closely set with the points directed upwards, while in the former they are directed downwards; the spike is also more compact, less distinctly lobed, more bristly; the *florets* are the same in both species, except that in the latter the inner valve of the *neuter* floret is more frequently wanting, and sometimes the whole floret is suppressed.

Habitat.—Rare; in sandy fields about London and Norwich; “scarcely indigenous.”—Hooker.

Annual; flowering in July and August.

GENUS XXXII. SESLE'RIA. ARDUIN. *Moor grass*.

GEN. CHAR. *Panicle* spiked. *Glumes* two, nearly equal, pointed or awned at the apex. *Glumelles* nearly equal; the outer jagged, awned at the apex; the inner bifid.—Named from Leonard Sesler, an Italian Physician and Botanist.

1. *S. cærulea*, Scop. (Fig. 134.) Spike ovate, with alternate membranous bractea at the base.

English Botany, t. 1613.—English Flora, vol. i. p. 114.—Lindley, Synopsis, p. 309.—Hooker, British Flora, vol. i. p. 42.—Sinclair, Hort. Gram. Woburn. p. 303.

Plant forming close thick tufts, the *roots* numerous, long, tough, and wiry. *Stem* from four to twelve or eighteen inches high, smooth, and striated, thickly clothed at the base with the remains of withered leaves, naked above. *Leaves* numerous, linear obtuse, smooth, except the edges and keel, which are frequently roughish, striated, single ribbed, a glaucous green, the upper ones very short. *Sheaths* short, close. *Ligula* absent. *Inflorescence* close, a short ovate, shining bluish-green, spiked panicle, the lower spikelets having thin membranous, jagged, toothed or ciliated bractea at their base. *Glumes* nearly equal, thin, shining bluish, somewhat hairy, ovate-lanceolate, keeled, pointed or awned, frequently jagged, toothed, or ciliated towards the extremity, mostly containing two *florets* longer than themselves. *Glumelles* nearly equal, *external* one the largest, shining bluish towards the extremity, from three to five toothed, ciliated, and slightly hairy ribbed, the keel terminating in the middle tooth, mostly lengthened into a short roughish awn; *inner* valve with two roughish ribs terminating in a bifid extremity, the edges inflexed and membranous. *Anthers* large, yellow tipped with purple.

Habitat.—Frequent in the mountainous districts in the North of England and in Scotland; plentiful at Settle, on the moors, and limestone districts in Yorkshire and Derbyshire.

Perennial; flowering in April and June.

This grass appears to be a favourite food of sheep, and is one of the superior alpine grasses, as containing a considerable proportion of nutritive matter; it is an early spring grass, but the quantity of herbage which it produces is inconsiderable, and its growth, after being cropped, is very slow. It appears to possess no other properties by which it can be cultivated with advantage in other than its natural place of growth, but in such situations it is one of the best and most nutritious grasses.

GENUS XXXIII. HIERO'CHLOE. GMELIN. *Holy-grass*.

GEN. CHAR. *Panicle* loose. *Glumes* two, nearly equal, three-flowered, the two lateral florets neuter, each containing three stamens; the terminal one perfect, containing two stamens and pistils. *Glumelles* nearly equal, with or without an awn. *Fruit* free.—Name from "ἱερός, sacred, χλόη or χλόν, a grass, so called, because in some parts of the Prussian dominions it is dedicated to the Virgin Mary, and strewed before the doors of the churches on festival days, as the *Sweet-flag* (*Acorus Calamus*) is in England."

1. *H. borealis*, Reom et Schult. (Fig. 135.) *northern Holy-grass*.
Panicle nearly erect, somewhat unilateral, flower stalks smooth, florets awnless, roughish; outer valve ciliated on the margin, leaves flat.

English Botany, Supplement, t. 2641.—English Flora, vol. i. p. 110.
Lindley, Synopsis, p. 306.—Hooker, British Flora, vol. i. p. 42.—*Holcus odoratus*, Linn. Sinclair, Hort. Gram. Woburn. p. 167.

Root fibrous, the plant rapidly extending itself by numerous *under-ground stems*. *Flowering stems* from twelve to eighteen inches high, erect, round, smooth, striated, leafy in the lower part, naked above. *Leaves* linear, with a long narrow point, smooth, finely striated, rough on the edges, beneath shining bright green, paler above, and sometimes slightly downy, those of the stem very short. *Sheaths* long, close, smooth, ribbed. *Ligula* broad, acute, torn or jagged on the edge. *Inflorescence* an erect or slightly drooping smooth branched spreading panicle. *Spikelets* three-flowered. *Glumes* two, nearly equal, smooth and shining, ovate, broadly pointed, membranous, a little longer than the florets, sometimes jagged or serrated towards the apex. *Florets* three, on short stalks, the lateral ones neuter (male flowers) having three stamens, (triandrous) pistils wanting, the central or terminal flower smallest, perfect, but with only two stamens (diandrous) and pistils. *Glumelles* unequal, the outer valve largest, of a firm almost cartilaginous



134.

Sesleria caerulea.



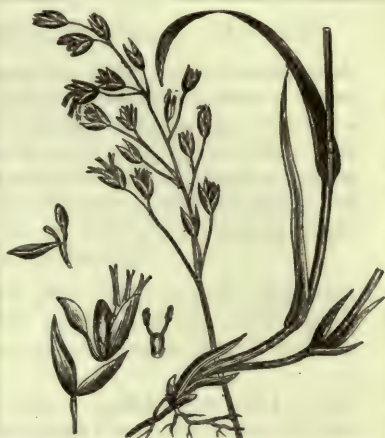
135.

Hierochloa borealis.



136.

Melica nutans.



137.

Melica uniflora.



138.

Molinia caerulea.



139.

Poa aquatica.

texture, shining, roughish, the margins fringed, pointed, not awned; inner valve about half as narrow, thin, membranous, ribbed, smooth, bifid at the apex. *Glumellules* linear, lanceolate. *Stigmas* large. *Anthers* large, yellow.

Habitat.—Very rare. This interesting plant was discovered by Mr. G. Don, in a narrow valley called *Kella*, in Angus-shire, Scotland.

Perennial; flowering in July.

This species like all others of the genus has the peculiar smell of new mown hay, similar to *Anthoxan'thum odora'tum*, but in a much greater degree, so much so, that according to Dr. Hooker, in Iceland, it is so plentiful as to be used by the people to scent their apartments and clothes; and it is said to be esteemed in Sweden for its narcotic effects. The produce of this grass in spring is very small and of a very tender nature; these, together with its strong spreading underground stems, render it a grass of no agricultural merit, a circumstance which is to be regretted, as it contains a greater proportion of nutritive matter than many of the early grasses.

GENUS XXXIV. MELICA. LINN. *Melic Grass*.

GEN. CHAR. *Panicle* loose. *Spikelets* one or two flowered, with the rudiments of one or more imperfect ones. *Glumes* two, nearly equal, about as long as the florets. *Glumelles* two, unequal, awnless, becoming hard, and investing the fruit.—Name probably derived from μέλα, *honey, mel*. *Melica*, or *Melliga*, is also a name given in Italy to the common Millet (*Sor'ghum vulga're*); and some resemblance between it and the present genus, may have been the reason of Linnæus giving it this name.

1. *M. nu'tans*, Linn. (Fig. 136.) *mountain Melic-grass*. *Panicle* drooping, nearly a simple raceme; *spikelets* pendulous on one side, containing two perfect florets.

English Botany, t. 1059.—English Flora, vol. i. p. 113.—Lindley, Synopsis, p. 307.—Hooker, British Flora, vol. i. p. 41.

Root with creeping underground stems. *Stem* from one to two feet high, nearly erect, simple, slender, roughish, striated and angular, leafy below. *Leaves* narrow, linear, acute, the lower ones much shorter than the upper, with a roughish margin. *Sheaths* striated, roughish. *Ligula* very short. *Inflorescence* a slightly drooping nearly simple raceme, sometimes quite simple. *Spikelets* on short rough stalks, hanging to one side. *Glumes* ovate, nearly as long as the florets, smooth, a deep purplish brown, the margins pale, nearly equal, the external one smallest, each five or seven-ribbed. *Perfect florets* two, the lower sessile, the upper on a short stalk. *Glumelles* unequal, cartilaginous; the outer valve ovate lanceolate, concave, roughish, strongly and nume-

rously ribbed, purplish green, the margins pale and membranous; inner valve pale, ovate acute, flat, smooth, except on the two strong marginal ribs, from the inner edge of which is inflexed a narrow thin membranous border. *Imperfect florets* paler, one, two, or three, each rising on a short stalk from the base of the inner valve of the floret below it. I have occasionally observed three perfect florets, in fine luxuriant specimens. *Anthers* yellow. *Stigmas* distant, rather long, feathery. *Seed* ovate attenuated, loose, in its covering of the hardened glumelles.

Habitat.—Woods in subalpine districts; not common. Middleton Dale, and other parts of Derbyshire. Most frequent in the north of England and in Scotland.

Perennial; flowering from May to June.

2. *M. uniflora*, Retz. (Fig. 137.) wood Melic-grass. Panicle branched; spikelets erect, spreading, containing one perfect floret.

English Botany, t. 1058.—English Flora, vol. i. p. 112.—Lindley, Synopsis, p. 307.—Hooker, British Flora, vol. i. p. 41.

Root with creeping underground stems. *Stem* erect, from one to two feet high, slender, smooth, striated, leafy, simple. *Leaves* flat, broader than the preceding species, thin, striated, roughish. *Sheaths* close, striated, nearly smooth. *Ligula* very short. *Inflorescence* a long branched, nearly erect, spreading panicle; its branches distant, slender, nearly smooth. *Spikelets* few, distant, erect. *Glumes* unequal, smooth, purplish brown, as long as the florets; outer valve smallest, lanceolate, with a single dorsal rib; inner larger, ovate lanceolate, five-ribbed. *Perfect floret* sessile, cartilaginous. *Glumelles* unequal; outer valve ovate, ribbed, pale green, with a purplish tinge, very concave; inner flat, smooth, except the two strong lateral ribs, from the inner edge of which is inflexed a broadish border. *Glumellula* of one thick notched yellow piece at the base of the outer valve of the glumella. *Imperfect floret* elevated on a smooth bent stalk, half as long as the perfect floret; the outer valve concave, of a very irregular shape, embracing the much smaller inner valve, and the rudiment of second still more imperfectly formed stalked floret. *Anthers* yellow. *Stigmas* distant, feathery. *Seed* small, truncate.

Habitat.—In the shade of woods and groves; frequent.

Perennial; flowering from May to July.

GENUS XXXV. MOLINIA. MENCH.

GEN. CHAR. *Panicle* loose. *Spikelets* two or more flowered, and sometimes with an imperfect floret. *Glumes* two, unequal, much shorter than the florets. *Glumelles* two, nearly equal, awnless.—Name in honour of *Giovanni Ignatio Molina*, who published an account of the plants of Chile in 1782.

1. *M. cœru'lea*, Mœnch. (Fig. 138.) *purple Molinia*. Panicle erect, rather close, purplish, leaves much shorter than the stem.

Lindley, Synopsis, p. 307.—*Mel'ica cœru'lea*, Linn. English Botany, t. 750.—English Flora, vol. i. p. 113.—Hooker, British Flora, vol. i. p. 41.—Sinclair, Hort. Gram. Woburn. p. 286.

- β. Panicle pale-green; spikelets few-flowered.

Mel'ica alpi'na, Don.—*Molin'ia depauper'a'ta*, Lindley.

Roots of numerous strong wiry fibres. *Stem*, erect, from one to two feet high, numerous, smooth, finely striated, the base frequently swollen, surrounded with numerous leaves, single-jointed near the bottom. *Leaves* numerous, long, narrow, linear, acuminate, finely striated, roughish especially on the upper surface. *Sheaths* close, smooth, striated. *Ligula* a tuft of short fine glossy hairs. *Inflorescence* a rather close, erect, roughish branched panicle, from two to six inches long. *Spikelets* numerous, erect, bluish-purple; "rarely, and perhaps only when growing in much sheltered situations, green." *Glumes* unequal, purple, becoming brown with age; the *outer* valve lanceolate, shorter than the *inner*, which has a longer sharper point, each with a single dorsal rib. *Florets* from three to six, the upper one or two imperfect, shining; *outer* valve lanceolate, three-ribbed, with a sharp point; the *inner* pale-green with two lateral ribs from which the inner margins are inflexed, the extremity acute. *Anthers* purple. *Stigmas* a dense purple feathery tufts. *Seed* small, loose, inclosed in the hardened glumelles.

Habitat.—On exposed moors, and on barren heathy situations, common.

Perennial; flowering in August.

For the purposes of cultivation this grass is of little or no value. The tough stems, we are informed by Withering, are used in some parts of England to make brooms, and used as a substitute for the more expensive ones made of hair; and Lightfoot says, that in Skye, the fishermen twist them into excellent ropes for their nets.

GENUS XXXVI. PO'A. LINN. *Meadow-grass*.

GEN. CHAR. *Panicle* loose. *Spikelets* three, or many-flowered. *Glumes* two, shorter than the florets. *Glumelles* two, nearly equal, awnless. Name from ποα, *grass*, or *herb*. This genus is so named in reference to their value as pasture grasses.*

* The above, there can be little doubt, is the derivation of the word Poa; but there are other words of the same meaning, as ποια and πον. While speaking of the derivation of the word Grass, it may be interesting to notice a remarkable coincidence between a systematic arrangement of the vegetable kingdom, (which has been adopted only within the last few years, after the

* *Spikelets linear or linear-ovate.*

1. *P. aquatica*, Linn. (Fig. 139.) *reed Meadow-grass*. Panicle erect, large, much branched, and spreading, florets numerous, obtuse; outer valve seven-ribbed; leaves broad lanceolate.

English Botany, t. 1315.—Hooker, British Flora, vol. i. p. 43.—*Glyce'ria aquatica*, English Flora, vol. i. p. 116.—Sinclair, Hort. Gram. Woburn. p. 354.—*Hydro'chloa aquatica*, Hartman, Lindley, Synopsis, p. 316.

Root with jointed creeping *underground stems* and numerous whorled fibres. *Stems* erect, from three to six feet high, striated, smooth, and leafy in the lower part, naked and roughish above, slightly compressed. *Leaves* long, linear-lanceolate, broad, flat, single-ribbed, rough on the edges and under side. *Sheaths* smooth, close, finely striated. *Ligula* obtuse, torn. *Inflorescence* a large nearly erect panicle, from six to twelve inches long, its branches arising in alternate half whorls, long, rough, repeatedly branched, spreading. *Spikelets* numerous, linear. *Glumes* unequal, membranous, smooth; *outer valve* smallest, single-ribbed; *inner* with a strong dorsal and two smaller lateral ribs; *florets* from five to ten or more, obtuse; *outer valve* with about nine strong ribs, smooth, or minutely downy; *inner* narrower, with two lateral ribs, from which the membranous margins are inflexed, bifid at the extre-

labours and investigations of ages,) and the divisions which are distinctly stated by the sacred historian Moses, in his account of the creation, given in the Book of Genesis, where we read that on the third day, or epoch, vegetables were created. In our translation, it is thus stated:—"God said, Let the earth bring forth grass (*Deshe*), the herb yielding seed, and the fruit-tree yielding fruit after his kind, whose seed is in itself, upon the earth: and it was so. And the earth brought forth grass, and herb yielding seed after his kind, and the tree yielding fruit, whose seed was in itself, after his kind." The primary divisions of what is called the Natural System of Botany, are three, (which appear to have been made without the least suspicion that they were the same as those given by Moses,) and were called by Linnæus, Cryptogama, Fruges, and Plantæ, which are synonymous with Cellulares, or Acotyledons,—Endogenæ, or Monocotyledons,—and Exogenæ, or Dicotyledons; and by some botanists they have been called *Spore-bearing*, or seedless plants, *Grain-bearing*, and *Seed-bearing* plants. These three divisions agree precisely with those of the Mosaic account above quoted. The word *DESHE* in the original Hebrew, which is translated in the text *grass*, is satisfactorily pointed out, both by an able writer in the 25th Number of "Jameson's Journal," and by the late Professor Burnet, to signify *springing* or *shooting plants*, or *tender herbs*. And we may also state, in corroboration of these opinions, that of Rosenmüller, in his Scholia on Genesis, ch. 1, v. 11: "Itaque in hoc commate in tres veluti classes, quidquid emittit terra, dividitur: 1. est tenera herba, sine semine, saltem conspicuo: 2. quæ semen profert majorque est: 3. arbores, sub quibus arbusta continentur." So that, in this sentence, whatever the earth sends forth, is divided, as it were, into three classes: 1. There is the tender herb without seed, at least any that is observable (Acotyledons); 2. That which produces seed, and is larger (Monocotyledons); 3. Trees, under which shrubs are included (Dicotyledons).

mity. *Glumellules* small, acute. *Anthers* yellow. *Stigmas* feathery.

Habitat.—On the banks of streams, drains, and swampy situations ; common.

Perennial ; flowering in July and August.

This, though a large coarse grass, is eaten by cattle with an apparent relish, and contains a large proportion of nutritive matter. It forms the principal winter provender in some parts of the fens of Lincolnshire and Cambridgeshire, where it grows with so great rapidity and luxuriance, that it is sometimes mown three times during the summer. Its quick growth and rapid wide-spreading stems, render it exceedingly troublesome in drains and rivers ; so much so in the Isle of Ely, we are informed by Mr. Curtis, as to render it necessary to cleanse them with an instrument called a *bear*—a sort of roller, with numerous sharp projecting pieces of iron, which is dragged up and down the river, to cut or tear up the roots.

2. *P. flu'itans*, Scop. (Fig. 140.) *floating Meadow-grass*. Panicle long, nearly erect, scarcely branched ; florets numerous, seven-ribbed, with short intermediate ones at the base ; leaves linear, acute.

English Botany, t. 1520.—Hooker, British Flora, vol. i. p. 43.—*Glyce'ria flu'itans*, English Flora, vol. i. p. 117.—Lindley, Synopsis, p. 315.—Sinclair, Hort. Gram. Woburn. p. 349.—*Fes'tuca flu'itans*, Linn.

Root with long, creeping, prostrate stems, thick, succulent, often partly floating in water, putting out roots and stems from the joints ; upper part erect, from one to three feet long, smooth, striated, leafy. *Leaves* linear-lanceolate, acute, flat, roughish, the lower ones floating on the surface of water. *Sheaths* long, smooth, finely striated, close, and slightly compressed. *Ligula* oblong, acute, often torn. *Inflorescence* a very long, nearly erect, slender panicle, branched mostly at the base, and spreading ; the upper spikelets on short, simple stalks, and erect. *Spikelets* linear, cylindrical, or slightly compressed. *Glumes* unequal, thin, membranous, each with a single green rib. *Florets* from eight to twelve. *Glumelles* equal ; the outer valve acute, or obtuse, membranous towards the extremity, minutely hairy, seven-ribbed, with short intermediate ones between them ; inner membranous, two-ribbed, the margins inflexed, notched at the extremity. *Glumellula* of one thick piece. *Anthers* small, yellow. *Stigmas* feathery. *Seed* oblong, furrowed on one side.

Habitat.—Pools, slow streams, and wet places ; frequent.

Perennial ; flowering from July to September.

This grass is of little or no agricultural utility. The seeds are purchased in the shops under the name of *manna-seeds*, and are said to be

used in some parts of Germany and Holland, as well as in Poland, as a great delicacy in soup and other articles of food. In some parts of Germany, Schreber says, it is cultivated for the value of the seeds. Small birds are very fond of the sweet unripe seeds; and the fine sharp bran is said to be useful in destroying intestinal worms in horses, but Sinclair observes, "they must be kept from water some hours afterwards."

3. *P. maritima*, Hudson, (Fig. 141.) *creeping Sea Meadow-grass*.

Panicle erect, rather close; spikelets of about five obtuse florets, outer valve five-ribbed; leaves involute; root with creeping stems.

English Botany, t. 1140.—Hooker, British Flora, vol. i. p. 44.—*Glyce'ria maritima*, English Flora, vol. i. p. 118.—*Sclero'chloa maritima*, Lindley, Synopsis, p. 315.

Root with numerous creeping *underground stems*, putting out numerous fibres and stems from the joints. *Whole plant* a glaucous-green. *Stems* numerous, bent at the base, about a foot high, rigid, smooth, and leafy, except at the top it is rather rough. *Leaves* linear, the edges mostly rolled inwards, sharp-pointed, the upper side and margins roughish. *Sheaths* long, rather swelled, smooth, finely striated. *Ligula* obtuse. *Inflorescence* a rather close, rough, branched panicle, arising mostly on one side, and spreading only when in flower. *Spikelets* linear, cylindrical. *Glumes* unequal; the *outer* smallest, single-ribbed; the *inner* with a sharp point and two rough ribs, the membranous margins inflexed. *Glumellules* acute. *Anthers* yellow. *Stigmas* feathery. *Seed* small, pointed at each extremity.

Habitat.—In wet places on the sea-coast; frequent.

Perennial; flowering in July and August.

4. *P. distans*, Linn. (Fig. 142.) *reflexed Meadow-grass*. Panicle erect, spreading, its branches at length deflexed; spikelets of about five obtuse florets, outer valve with five indistinct ribs; leaves flat; root fibrous.

English Botany, t. 986.—Lindley, Synopsis, p. 318.—Hooker, British Flora, vol. i. p. 44.—Sinclair, Hort. Gram. Woburn. p. 323.—*Glyce'ria distans*, English Flora, vol. i. p. 118.

Root fibrous. *Whole plant* a glaucous green, tufted. *Stems* numerous, bent at the base, round, smooth, leafy, from one to two feet high. *Leaves* linear, flat, smooth on the under side, roughish on the upper. *Sheaths* smooth, striated, the upper ones longest, slightly inflated. *Ligula* short, striated, obtuse, notched or torn. *Inflorescence* an erect, spreading panicle; its branches slender, angular, roughish, attached to the rachis by a swollen joint, in alternate half whorls, singularly bent downwards as the plant advances to maturity, by which character it may readily be distinguished from its allied species. *Spikelets* short, somewhat compressed, shining, and sometimes tinged

with purple. *Glumes* membranous on the edges; the *outer* valve smallest, single-ribbed; the *inner* with three ribs. *Florets* from three to seven. *Glumelles* nearly equal; the *outer* one acute and membranous at the extremity, with five indistinct ribs; the *inner* pointed or bifid at the extremity, with two roughish lateral ribs, from which the inner membranous margins are inflexed. *Glumellules* acute. *Anthers* yellow. *Stigmas* large, feathery.

Habitat.—In sandy situations, principally near the sea—*Hooker*. Near Dublin—*Mr. W. Wilson*. Nottingham Meadows, and Lenton, rare—*Dr. Howitt*. Near Rotherham—*Salt's Herb*. Attercliffe near Sheffield, Yorkshire, and road sides about Worksop, Nottinghamshire, plentiful—*R. D.*

Perennial; flowering in July and August.

The singular deflection of the branches of the panicle arises from the peculiar structure attached to their base. In a newly developed panicle, the branches are erect: it may then be distinctly seen that the two external angles are formed by two of the ribs or stria passing from the stem along the branch, and between them is a pale compact membrane. The inner surface is a pale yellow, scarcely swollen; this, however, is limited to a very short distance at the base, and as the plant advances to maturity, this part gradually enlarges, and forms a projecting tubercle. The outer surface, formed as above stated, is capable of resisting the pressure of the gradually swelling tubercle; consequently, it forms, as it were, a hinge, which allows the branches to be bent backwards as the tubercle is developing. A thin transverse section of the tubercles, examined with a strong magnifying power, shows them to be composed of cells of an hexagonal figure, much smaller and more compact in the lower part and middle, gradually becoming larger towards the upper and external surface.

5. *P. procumbens*, Curtis, (Fig. 143.) *procumbent Sea Meadow-grass*. Panicle rather close, ovato-lanceolate; spikelets leaning one way, linear, of about four florets, outer valves with five ribs.

English Botany, t. 532.—*Hooker*, British Flora, vol. i. p. 44.—*Glyceria procumbens*, vol. i. p. 119.—*Sclerochloa procumbens*, Lindley, Synopsis, p. 316.

Whole plant a glaucous green, and rigid. *Root* fibrous. *Stems* procumbent at the base, from six to eight inches high, smooth, leafy, and branched at the base. *Leaves* flat, linear, obtuse, ribbed, roughish on the edges and upper surface, smooth beneath. *Sheaths* long, somewhat inflated, striated, smooth. *Ligula* short, obtuse, often torn. *Inflorescence* a close, roughish branched, two-ranked panicle, about two inches long, more spreading when in flower. *Spikelets* two-ranked, turned to one side. *Glumes* unequal: the *outer* obtuse, with three strong ribs; the *inner* acute, with a single rib. *Florets* about four, oblong,

rather distant. *Glumelles* nearly equal: the *outer* obtuse, five-ribbed; the *inner* membranous, with two marginal hairy ribs, mostly bifid at the apex. *Glumellules* acute. *Stigmas* feathery. *Anthers* small, yellow. *Seed* compressed.

Habitat.—In salt marshes near the sea. St. Vincent's Rock, Bristol; Essex; Scarborough; Yarmouth; and other places. Apparently not rare.

Annual; flowering from June to August.

6. *P. ri'gida*, Linn. (Fig. 144.) *hard Meadow-grass*. Panicle erect, rigid, lanceolate; spikelets two-ranked, leaning one way, linear, of about seven nearly ribless florets; root fibrous.

English Botany, t. 1371.—Hooker, British Flora, vol. i. p. 44.—*Glyce'ria ri'gida*, English Flora, vol. i. p. 120.—*Sclero'chloa ri'gida*, Lindley, Synopsis, p. 316.

A very rigid and wiry plant, varying from a light green to a dark purplish colour. *Root* of numerous branched fibres. *Stem* from two to six inches high, branched, and bent at the base, or simple and erect, smooth, repeatedly jointed and leafy below. *Leaves* short, striated, the margins more or less rolled inwards, roughish on the upper side, smooth beneath. *Sheaths* short, smooth, striated. *Ligula* oblong, obtuse, mostly torn. *Inflorescence* a rather close, two-ranked panicle. *Spikelets* linear, turned to one side, arising from the angular zigzag rachis on short, smooth, angular, simple, or branched stalks. *Glumes* unequal, lanceolate, the smaller with a single dorsal rib, the larger with a dorsal and two lateral ribs. *Florets* about seven, rather distant, smoothish. *Glumelles* nearly equal: *outer* valve obtuse, with membranous edges, scarcely ribbed; *inner* with two lateral, roughish ribs, bifid at the apex. *Anthers* short. *Stigmas* feathery.

Habitat.—Crevices of walls and rocks, and dry sandy situations; not uncommon.

Annual; flowering in June.

7. *P. compress'a*, Linn. (Fig. 145.) *flat-stemmed Meadow-grass*. Panicle rather close, spreading when in flower, partially leaning one way; spikelets ovate, oblong; florets from five to seven, connected by a web at the base; stem compressed; root with creeping stems.

English Botany, t. 365.—English Flora, vol. i. p. 121.—Lindley, Synopsis, p. 316.—Hooker, British Flora, vol. i. p. 45.—Sinclair, Hort. Gram. Woburn. p. 306.

The whole plant is more or less of a glaucous green. *Root* with creeping stems. *Stems* procumbent, leafy, and often branched at the base, naked above, roughish, striated, and remarkably compressed. *Leaves* short, flat, linear, keeled and striated, smooth beneath, roughish on the upper side and edges. *Sheaths* rather long, somewhat inflated,



140.

Poa fluitans.



141.

Poa maritima.



142.

Poa distans.



143.

Poa procumbens.



144.

Poa rigida.



145.

Poa compressa.

striated, and roughish. *Ligula* short, obtuse. *Inflorescence* an erect panicle, varying in length from one to three inches, according to the situation of its growth; spreading when in flower, but rather close both before and after. *Spikelets* ovate, oblong. *Glumes* nearly equal, ovate, acute, each three-ribbed, the dorsal one roughish. *Florets* from five to seven, the lower ones connected at the base, and partly up the keel and edges of the *glumelles*, by a soft, fine white web of some length: the *outer* valve of the *glumelles* ovate, acute, with a strong dorsal and four rather indistinct lateral ribs; *inner* valve with two lateral, roughish ribs, bifid at the apex; the margins membranous, inflexed. *Anthers* small. *Stigmas* densely feathery.

Habitat.—On walls, rocks, and dry, waste places; frequent.

Perennial; flowering from June to August.

For purposes of cultivation, this grass is of little utility, although it contains a considerable proportion of nutritive matter; the quantity of herbage which it produces is too scanty in comparison with many other valuable grasses, so as to render it scarcely worthy the attention of the farmer.

**** *Spikelets ovate.***

8. *P. alpi'na*, Linn. (Fig. 146) *alpine Meadow-grass*. Panicle loose, spreading; glumes nearly equal; florets four or five, hairy at the base; leaves broadly linear, obtuse; ligulæ of the upper leaves oblong, acute,—of the lower short, obtuse.

English Botany, t. 1003.—English Flora, vol. i. p. 122.—Lindley, Synopsis, p. 316.—Hooker, British Flora, vol. i. p. 45.—Sinclair, Hort. Gram. Woburn. p. 301.

β. glomera'ta; spikelets densely crowded. *D. Don*, Hooker's Flora Scotica, vol. i. p. 34.

Root fibrous. *Stem* erect, from six to twelve inches high, sometimes bent at the base, and branched and leafy, naked above, round, smooth, finely striated, mostly purplish. *Leaves* smooth, sometimes roughish on the edges and upper side; the lower numerous, tufted, linear, flat, striated, rather short, obtuse, with a fine bristle point; their *sheaths* short; the *ligulæ* short, obtuse: upper leaves much shorter, narrower; the margins inflexed; the sheaths much longer; the *ligulæ* lanceolate, mostly torn. *Inflorescence* an erect, loose, spreading panicle; its branches smooth, mostly in pairs. *Spikelets* ovate, rather large. *Florets* mostly four, sometimes five. *Glumes* ovate, lanceolate, green or purplish, with a strong keel, terminating in a short point or awn, and two lateral ribs; the margins membranous. *Glumelles* green or purplish: *outer* valve ovate, lanceolate; the keel roughish at the apex, silky at the base; the margins thin and membranous: *inner* valve with two lateral ribs, finely fringed; the apex notched; the margins membranous, inflexed. *Anthers* rather large. *Stigmas* feathery.

The florets, instead of being as above described, are frequently found in a viviparous state.

Habitat.—Frequent on the lofty Scotch and Welsh mountains, and not unfrequent in Ireland.— β . Banks of the Esk,—*D. Don.* (*Hook.*)

Perennial; flowering in July and August.

9. *P. laxa*, Hæk. (Fig. 147.) *wavy Meadow-grass*. Panicle loosely spreading, drooping; glumes nearly equal; florets about three, hairy, and connected by a web at the base; leaves narrow, linear, acute; ligules all lanceolate.

English Flora, vol. i. p. 123.—Lindley, Synopsis, p. 316.—Hooker, British Flora, vol. i. p. 45.—*Po'a flexuosa*, English Botany, t. 1123.

Root fibrous, often arising from the lower joints of the stem. *Stem* ascending, more or less bent at the joints, about a foot high, very slender, especially in the upper part, which droops with the weight of the panicle; roughish above. *Leaves* narrow, linear, lanceolate, more numerous than in the last species, roughish on the edges and upper side. *Sheaths* long, close, striated, slightly compressed, and smooth. *Ligula* lanceolate, acute. *Inflorescence* a loosely spreading panicle. *Glumes* nearly equal, downy on the keel: the *outer* smallest, single-ribbed; the *inner* with three ribs. *Florets* mostly three, tinged with purple. *Glumelles* acute, obscurely ribbed; the *outer* downy on the rib and keel, and connected at the base with a complicated web; the margin thin and membranous. *Anthers* small, yellow.

The whole plant has somewhat of a glaucous hue, and much smaller and slenderer than the last species; the flowers, like it, are frequently found in a viviparous state.

Habitat.—On Ben Nevis, Scotland; first found by Mr. T. Mackay.

Perennial; flowering in July.

10. *P. bulbo'sa*, Linn. (Fig. 148) *bulbous Meadow-grass*. Panicle close; glumes nearly equal; florets about four, downy at the keel, and connected by a web at the base; leaves short, finely serrated on the margins; stems swollen into bulbs at the base.

English Botany, t. 1071.—English Flora, vol. i. p. 123.—Lindley, Synopsis, p. 317.—Hooker, British Flora, vol. i. p. 46.

Root of numerous, long, branched fibres. *Stem* from four to six inches high, mostly bent in the lower part, erect above, smooth, the base formed into an oblong bulb by the swelling of the base of the leaves, and surrounded with dry and withered sheaths. *Leaves* numerous, linear, short, keeled and striated, the edges with a narrow, serrated, pale, cartilaginous margin. *Sheaths* smooth, striated, loose, mostly purplish, the upper ones long, the lower short. *Ligula* lanceolate, embracing the stem, and decurrent on the margins of the sheath. *Inflorescence* an erect, simple, scarcely branched panicle. *Glumes* nearly equal, lanceolate, smooth, except the upper part of the keel.

Florets three or four, more or less tinged with purple. *Glumelles* nearly equal: the *outer* valve acute, obscurely ribbed, finely downy; the keel with long down, especially at the base, which is webbed: the *inner* valve with two marginal, more or less fringed ribs, bifid at the apex. *Stigmas* small, feathery. *Anthers* slender, yellow.

Habitat.—On the east and southern parts of England, principally on the sea-shores.

Perennial; flowering in April and May.

This singular species of grass is peculiarly fitted to dry, sandy situations. The bulbs formed at the base of the stems and leaves, are blown about on the surface of the sand during the greater part of the summer months, until the ground becomes humid, when they also become fixed, and shortly put out their fibrous roots deep into the sand, and, during the early part of spring, shoot forth an abundance of leaves, which form a grateful, and the principal part of the herbage for cattle on the Denes at Yarmouth, and other places, until there is a greater abundance of other summer food, by which time they have withered away. This species, Sir J. E. Smith observes, “abounds in Germany, France, and Italy;” and that those collected “in the streets of Rome are usually viviparous;” and Sir W. J. Hooker adds, “So are my specimens from Germany;” but it has not, that I am aware of, been found in that state in this country.

*** *Spikelets ovate-oblong.*

11. *P. pratensis*, Linn. (Fig. 149.) *smooth stalked Meadow-grass.*

Panicle spreading; glumes nearly equal, three-ribbed; florets about four, five-ribbed, connected by a web at the base; stem and leaves smooth; ligula short; root with creeping stems.

English Botany, t. 1073.—English Flora, vol. i. p. 126.—Lindley, Synopsis, p. 317.—Hooker, British Flora, vol. i. p. 46.—Sinclair, Hort. Gram. Woburn. p. 142.

β. angustifolia; smaller, with narrower involute leaves. *Poa angustifolia*, Linn.

γ. sub-cærulea; smaller; the leaves short, broad, and the whole plant of a glaucous hue. *Poa sub-cærulea*, Smith, English Botany, t. 1004.

Root fibrous, with long horizontal *underground stems*, which frequently give out numerous leaves, and erect, smooth, flowering stems, from one to two feet high. *Leaves* numerous, linear, spreading, obtuse, striated, and smooth, sometimes roughish on the keel and margins. *Sheaths* close, smooth, striated, upper ones rather long. *Ligula* short, obtuse, a character by which this species is readily distinguished from the following, to which it is nearly allied. *Inflorescence* an erect, smooth, branched, spreading panicle. *Glumes* nearly equal, three-ribbed, smooth, except the upper part of the keel. *Florets* about four,

green or purplish. *Glumelles* nearly equal: the *outer* valve five-ribbed; the margins and point membranous; the ribs and keel downy, and copiously webbed at the base: the *inner* valve lanceolate, with two roughish ribs, from which the narrow membranous margin is inflexed. *Stigmas* rather long, feathery, branched. *Anthers* yellow.

Habitat.—Meadows and pastures; common. β . In woods. γ . Not uncommon in dry barren places, and on walls, especially in alpine countries.

Perennial; flowering in June and July.

This grass, though nearly allied to the following species in its general appearance, is very different in its habit and utility as an agricultural grass, and ought to be carefully distinguished in making selections of seeds to be sown in different kinds of land. All plants with creeping underground stems impoverish the land much more than those with simple fibrous roots, and ought not to be chosen if the latter can be substituted for them, that possess other equal advantages. The value of this species is the earliness with which it produces its herbage; but the quantity which it produces—for it puts out flowering stems but once in the season, and is of slow growth—compared with many other grasses, together with its habit, cannot, observes Mr. Sinclair, justify its claim to a place in the composition of the best natural pastures, and on this account should be carefully avoided as an unprofitable plant for that purpose.

12. *P. trivialis*, Linn. (Fig. 151.) *roughish Meadow-grass*. Panicle spreading; glumes unequal, pointed, and roughish; florets about three, five-ribbed, connected by a web at the base; stem and leaves roughish; ligula oblong; root fibrous.

English Botany, t. 1072.—English Flora, vol. i. p. 124.—Lindley, Synopsis, p. 317.—Hooker, British Flora, vol. i. p. 46.—Sinclair, Hort. Gram. Woburn. p. 146.

Root fibrous. *Stems* several, bent at the base, erect above, from one to two feet high, roughish, and leafy, frequently purplish. *Leaves* spreading, flat, linear, lanceolate, roughish, as well as the long, slightly compressed, striated *sheaths*. *Ligula* acute, oblong, or lanceolate. *Inflorescence* an erect, rather large, much branched, spreading panicle; the branches angular and rough. *Glumes* unequal, roughish: the *outer* valve smallest, single-ribbed; the *inner* with three ribs. *Florets* mostly three, sometimes purplish. *Glumelles* roughish: the *outer* valve acute, five-ribbed, the edges thin and membranous at the extremity, the base with very long, convoluted, slender filaments; the *inner* valve lanceolate, with two lateral ribs, from which the membranous margins are inflexed. *Stigmas* feathery, and branched. *Anthers* yellow or purple, small. *Seed* small, angular.

Habitat.—Meadows and pastures; common.

Perennial; flowering from June to August.



146.

Poa alpina.



147.

Poa laxa.



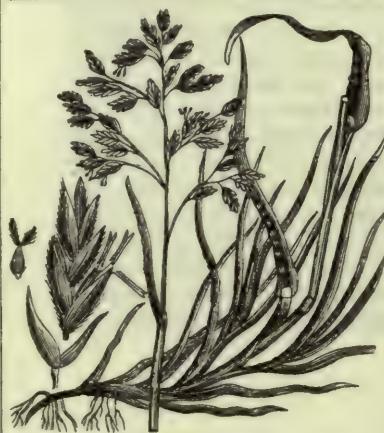
148.

Poa bulbosa.



149.

Poa pratensis.



150.

Poa annua.



151.

Poa trivialis.

The roughish Meadow-grass is one of the most valuable of our native grasses: it possesses highly nutritive properties, arrives at perfection at the most seasonable period, and is preferred by cattle before almost any other grass, as is evident by those parts of pastures where it is most abundant being more closely eaten down than any other. It grows to the greatest perfection in moist, rich soils, in sheltered situations, or amongst a mixture of other grasses, where it will get a partial covering: under such circumstances, it has been found to nearly double the quantity of its produce. This grass is most valuable for permanent pastures, and in sowing the seed it should be in the proportion of about seven pounds to the acre. Valuable, however, as this grass is in moist, rich soils, and sheltered situations, it cannot with advantage be cultivated in dry exposed land, as the quantity of herbage which it produces is far less, and it gradually diminishes, and frequently dies off in the course of a few years.

13. *P. annua*, Linn. (Fig. 150.) *annual Meadow-grass*. Panicle spreading; glumes unequal; florets about five, a little remote, five-ribbed, hairy, but without web at the base; stem compressed; root fibrous.

English Botany, t. 1141.—English Flora, vol. i. p. 127.—Lindley, Synopsis, p. 317.—Hooker, British Flora, vol. i. p. 46.—Sinclair, Hort. Gram. Woburn. p. 400.

Root fibrous. *Stems* numerous, bent and branched at the base, smooth, pale, and striated; the lower joints often putting out roots. *Leaves* linear, flat, flaccid, blunt, frequently waved, a bright palish green, smooth, except a slight roughness on the edges. *Sheaths* close, compressed, smooth. *Ligula* obtuse in the lower leaves, acute in the upper. *Inflorescence* an erect, spreading, smooth, branched panicle. *Glumes* unequal, smooth, or roughish: the *outer* valve smallest, lanceolate, single-ribbed; the *inner* ovate-lanceolate, three-ribbed. *Florets* about five, rather remote, green tinged with purple, smooth, shining, the margins pale and membranous. *Glumes* unequal: the *outer* ovate-lanceolate, acute, five-ribbed, hairy, without web at the base; the *inner* valve with two marginal, roughish ribs, bifid at the apex. *Anthers* yellow. *Stigmas* large. *Seed* small, angular, pale.

Habitat.—Common everywhere.

Annual; flowering from April to November.

This is one of the most common of the grasses, growing almost anywhere upon walls, roofs, the crevices of pavements, road-sides, &c. It is also very various in size, depending upon the place of its growth. It is a very troublesome weed in court-yards, gravel walks, &c., and difficult of extirpation, for it produces seed nearly all the year round: in such like places, it has been recommended to destroy it by boiling water, lime, &c.; but perhaps the most effectual method is to sprinkle the places pretty well over with common salt, once or twice during the

year. For agricultural purposes it is of no value, compared with many other grasses.

14. *P. nemoralis*, Linn. (Fig. 152.) *wood Meadow-grass*. Panicle slender, slightly drooping, spreading; glumes unequal; florets about four, a little remote, silky, scarcely webbed; stem slightly compressed; ligula short, obtuse.

English Botany, t. 1265.—English Flora, vol. i. p. 129.—Lindley, Synopsis, p. 317.—Hooker, British Flora, vol. i. p. 46.—Sinclair, Hort. Gram. Woburn. p. 182.

β. glau'ca, (Fig. 153.) Whole plant much smaller, and glaucous.

Hooker, British Flora, vol. i. p. 46.—*Po'a glau'ca*, English Botany, t. 1720.—English Flora, vol. i. p. 128.—Lindley, Synopsis, p. 317.—Sinclair, Hort. Gram. Woburn. p. 192.

Root fibrous. *Stem* from one to three feet high, slender, erect, branched at the base, smooth, slightly compressed. *Leaves* narrow, flat, linear, acute, ribbed, roughish on the edges and keel. *Sheaths* short, close, striated, smooth. *Ligula* very short, obtuse, notched. *Inflorescence* a loose, slightly drooping, spreading, waved, slender, rough, branched panicle. *Glumes* unequal, ovate-lanceolate, acute, keeled, and obscurely ribbed. *Florets* from three to five, rather distant, a shining green tinged with purple. *Glumelles* nearly equal: the *outer* valve with a thin membranous margin, the keel and two lateral ribs silky, the base scarcely webbed; the *inner* with two strong, smooth, lateral ribs, the membranous margins inflexed, the point bifid. *Stigmas* feathery. *Anthers* yellow.

Habitat.—Frequent in woods and shady places.—*β.* Frequent on the Welsh and Scotch mountains.

Perennial; flowering in June and July.

The variety *glauca* was regarded by Sir J. E. Smith as a distinct species; but from the examination of both wild and cultivated specimens, we think with Sir W. J. Hooker, that it is but an alpine state of *Poa nemoralis*.

GENUS XXXVII. TRIODIA. BROWN. *Heath-grass*.

GEN. CHAR. *Panicle* racemed. *Spikelets* many-flowered. *Glumes* two, nearly equal. *Glumelles* two, unequal: the external one with three nearly equal teeth; the middle one stiff, straight.—Name from τρις, *three*, and οδους, *a tooth*; in reference to the three-toothed apex of the outer glumella.

1. *T. decumbens*, Beauv. (Fig. 154.) *decumbent Heath-grass*. Panicle a nearly simple raceme of few spikelets; glumes smooth, as long as the florets; ligula a tuft of hairs.

English Flora, vol. i. p. 131.—Lindley, Synopsis, p. 311.—Hooker, British Flora, vol. i. p. 47.—Sinclair, Hort. Gram. Woburn. p. 377.—*Fes'tuca decum'bens*, Linn.—*Po'a decum'bens*, English Botany, t. 792.

Root with strong fibres, sometimes slightly creeping. *Stems* mostly numerous, from six to twelve inches high, bent in the lower part, erect in the upper, tough, smooth. *Leaves* linear, acuminate, striated, scattered, with rather long hairs, smooth except towards the point. *Sheaths* close, smooth, striated, hairy. *Ligula* a tuft of rather long whitish hairs. *Inflorescence* a nearly simple raceme, of from six to twelve spikelets, their footstalks and the rachis rough. *Glumes* nearly equal, lanceolate, acute, keeled and more or less distinctly ribbed, purplish, the margins thin and pale, smooth except the keel. *Florets* about four. *Glumelles* unequal: the *external* one ovate, smooth, shining, ribbed; the base with a tuft of short fine white hairs on each side, and frequently the margins are fringed nearly their whole length; the apex with three teeth: the *internal* valve ovate, obtuse, with two strong, green, ciliated, lateral ribs, from which the thin membranous margins are inflexed. *Seed* ovate, flat. *Stigmas* feathery.

Habitat.—On heaths, poor sandy and mountainous districts; not uncommon.

Perennial; flowering in July.

GENUS XXXVIII. BRI'ZA. LINN. *Quaking-grass*.

GEN. CHAR. *Panicle* loose. *Spikelets* many-flowered. *Glumes* two, equal. *Glumelles* two, unequal, awnless; the *outer* convex, swelled at the base; the *inner* small and flat. *Fruit* closely invested with the glumelles.—Name from " $\beta\rho\iota\theta\omega$, to balance; the spikelets being most delicately suspended."

1. *B. me'dia*, Linn. (Fig. 155.) *common Quaking-grass*. *Spikelets* broadly ovate, of about seven florets; glumes shorter than the florets; ligula short, obtuse.

English Botany, t. 340.—English Flora, vol. i. p. 133.—Lindley, Synopsis, p. 315.—Hooker, British Flora, vol. i. p. 47.—Sinclair, Hort. Gram. Woburn. p. 205.

Root fibrous, often woolly. *Stems* mostly numerous from the same root, erect, from one to two feet high, slender, smooth, surrounded with numerous leaves at the base. *Leaves* rather short, linear, acuminate, roughish, especially towards the point. *Sheaths* close, smooth, striated. *Ligula* short, obtuse. *Inflorescence* a wide-spreading, slender, roughish, repeatedly branched panicle. *Spikelets* numerous, broadly ovate, smooth, and shining. *Glumes* ovate, obtuse, very concave, slightly compressed, three-ribbed, purple, with a pale, narrow, membranous margin. *Florets* about seven. *Glumelles* unequal: the *outer* valve

like the glumes, but larger and more concave; the *inner* much smaller, plane, with two lateral roughish ribs, the apex bifid. *Stigmas* long, feathery. *Fruit* triangular, closely invested with the *glumelles*.

Habitat.—Pastures; very common.

Perennial; flowering in May and June.

The appearance and size of this grass varies considerably: it is not uncommon to find it in some situations two, or even three, feet high, and in others not more than four or six inches. The elegant and graceful panicles, supporting their ovate spikelets upon slender, silk-like stalks, are put into a tremulous motion by the slightest passing breeze; hence its popular name of Quaking, or Trembling Grass: and the various shades of colour which they are found, (often in the same locality,) from a dark shining purple to a pale yellowish-green, have rendered them a favourite winter decoration and ornament. It is a grass containing a considerable proportion of nutritive matter, is eaten by most cattle, and is cultivated with the greatest advantage in poor sandy or strong tenacious soils; but in rich pasture or meadow lands, it is not cultivated with the same advantage or profit, but is injured by a too great supply of manure.

2. *B. mi'nor*, Linn. (Fig. 156.) *small Quaking-grass*. Spikelets triangular, of about seven florets; glumes longer than the florets; ligula elongated, acute.

British Flora, vol. i. p. 133.—English Botany, t. 1316.—Lindley, Synopsis, p. 315.—Hooker, British Flora, vol. i. p. 47.

Root fibrous, downy. *Stem* from three to six inches high, smooth, often branched at the base. *Leaves* linear, roughish on the edges. *Sheaths* close, smooth. *Ligula* elongated, acute, more or less decurrent. *Inflorescence* similar to the last, but smaller, as is the whole plant. *Spikelets* triangular, smooth, green or white, shining, sometimes purplish. *Glumes* longer than the florets, which are generally seven in number. *Glumelles* unequal: the *outer* valve very concave, and swollen at the base; the *inner* much smaller, and flat, with two marginal ribs, and bifid at the apex. *Stigmas* long, feathery. *Fruit* closely invested by the *glumelles*.

Habitat.—Fields in the South of England; very rare. About Bath; in Cornwall, Jersey, and Guernsey.

Annual; flowering in July.

GENUS XXXIX. FESTUCA. LINN. *Fescue-grass*.

GEN. CHAR. *Panicle* loose or contracted. *Spikelets* many-flowered. *Glumes* two, unequal. *Glumelles* two, the outer valve acuminate or awned at the apex.—The derivation of the name is doubtful:



152.

Poa nemoralis.



153.

Poa nemoralis, β glauca.



154.

Tridax decumbens.



155.

Briza media.



156.

Briza minor.



157

Festuca ovina.





158. *Festuca ovina*, : vivipara.



159. *Festuca duriuscula*.



160. *Festuca rubra*.



161. *Festuca Myurus*.



162. *Festuca bromoides*.



163. *Festuca uniglumis*.

according to Pheis, it is from the Celtic word *fest*, which signifies *food* or *pasturage*; in Latin, the word *festuca* signifies the shoot or stalk of a tree or herb.

* *Glumelles with a short awn.*

1. *F. ovi'na*, Linn. (Fig. 157 and 158.) *Sheep's Fescue-grass*. Panicle rather close; spikelets mostly turned to one side, oblong, of about five florets; stems square upwards; leaves bristle-shaped.

English Botany, t. 585.—English Flora, vol. i. p. 139.—Lindley, Synopsis, p. 313.—Hooker, British Flora, vol. i. p. 48.—Sinclair, Hort. Gram. Woburn. p. 257.

β. Sm. *ru'bra*; panicle purplish. *Festu'ca ru'bra*, Withering.

γ. Sm. *cæ'sia*; whole plant glaucous. *Festu'ca cæ'sia*, English Botany, t. 1917:

δ. Sm. *tenuifo'lia*; leaves more numerous, longer, and slenderer; glumelles acuminate, awnless. *Festu'ca tenuifo'lia*, Sibthorp, Schrader.

ε. Hook. *vivip'ara*, (Fig. 158.); plant taller; florets viviparous. *Festu'ca ovi'na*, β. Linn. γ. Schrader.—*Festu'ca vivip'ara*, English Botany, t. 1355.—English Flora, vol. i. p. 140.—Lindley, Synopsis, p. 313.

Root of numerous, long, smooth, branched fibres. *Stems* numerous, from three to eighteen inches high, erect, smooth, slender, round and leafy in the lower part, naked and square in the upper. *Leaves* very numerous, tufted, narrow, acute, their margins so closely rolled inwards as to appear bristle-shaped, smooth at the base, roughish towards the apex, mostly of a somewhat glaucous-green, and varying considerably in their length. *Sheaths* close, smooth, striated. *Ligula* very short, projecting on each side. *Inflorescence* an erect, short, rough branched, rather close, one-sided panicle. *Spikelets* oblong, often purplish. *Glumes* unequal, acute, nearly smooth, keeled, and with two more or less distinct lateral ribs. *Florets* about five, rather distant. *Glumelles* equal: the *outer* valve keeled and ribbed, smooth, except towards the apex, which is more or less rough; sometimes downy, especially in the viviparous variety; acuminate or awned at the extremity; the awn roughish, variable in length, but not longer than half the length of the valve: the *inner* valve with two lateral roughish ribs, and bifid at the apex. *Stigmas* feathery.

Habitat.—On dry, elevated pastures; common.—s. On the mountains of Scotland, Wales, and Ireland; frequent.

Perennial; flowering in June and July.

This grass, which is found abundant on downs, high moors, and dry sandy situations, is a favourite food of sheep, and its fine succulent foliage is well fitted for their organs of mastication. It is said to be from the sheep feeding on this grass, that the South Down and Forest mutton obtains its superiority. For cultivation, this grass is little

capable of improvement; it is true that a greater produce is obtained when it is grown in a rich loamy soil, but not in proportion to the quantity that can be produced from other grasses in the same situation. Its value as a pasture grass is limited to the natural places of its growth, to which it is admirably adapted by its long, penetrating, fibrous roots,—the close, tufted manner of its growth,—and its narrow, thread-like leaves. Mr. Curtis has pointed out the advantage of this grass for making grass-plats, lawns, or bowling-greens: it does not require so frequent mowing, and keeps greener in dry weather, owing to the length of its roots: for this purpose it will be found to answer best in a light sandy soil.

2. *F. duriuscula*, Linn. (Fig. 159.) *hard Fescue-grass*. Panicle spreading; spikelets mostly turned to one side, oblong, of about six awned florets; stem round; stem-leaves nearly flat, lower ones bristle-shaped; root fibrous.

English Botany, t. 470.—English Flora, vol. i. p. 141.—Lindley, Synopsis, p. 314.—Hooker, British Flora, vol. i. p. 49.—Sinclair, Hort. Gram. Woburn. p. 156.

Root fibrous, tufted. *Stem* erect, from one to two feet high, smooth, striated, round. *Upper leaves* nearly flat, with long, close, smooth, striated sheaths; the lower leaves numerous, much longer, striated, and keeled; the margins closely rolled inwards, so as to appear bristle-shaped; their sheaths shorter, hairy or downy. *Ligula* very short, obtuse. *Inflorescence* an erect, somewhat spreading, one-sided panicle; its branches short, angular, rough. *Spikelets* oblong, green or purplish, smooth, or sometimes roughish. *Glumes* unequal: the outer valve shortest, keeled; the inner keeled and ribbed. *Florets* about six, rather distant. *Glumelles* equal: the outer keeled, ribbed, and awned, the awn not more than half the length of the valve; the inner valve with two lateral, roughish ribs, the apex bifid. *Stigmas* protruding, feathery. *Anthers* yellow.

This species is nearly allied to the above, from which it is at once distinguished by its greater size and stouter habit.

Habitat.—In pastures, meadows, and waste places; plentiful.

Perennial; flowering in June and July.

This is always found among the grasses of a natural pasture, especially where the soil is rather of a light rich nature. It is one of the best grasses for sheep, springing early, and producing fine succulent herbage, though not very abundant; and its long fibrous roots enable it to withstand the injurious effects of continued dry weather. Mr. Sinclair remarks, that “it attains to the greatest perfection when combined with the *Festuca pratensis* and *Poa trivialis*,” and that it is entitled “to a place in the composition of the best pastures, though in a small proportion.”

3. *F. ru'bra*, Linn. (Fig. 160.) *creeping Fescue-grass*. Panicle spreading; spikelets turned to one side, oblong; florets longer than their awns; leaves downy on their upper side, more or less involute; root with extensively creeping, underground stems.

English Botany, t. 2056.—English Flora, vol. i. p. 142.—Lindley, Synopsis, p. 314.—Hooker, British Flora, vol. i. p. 49.—Sinclair, Hort. Gram. Woburn. p. 261.

Root with extensive creeping, underground stems,—the only character by which this can be distinguished from the above species; “and may not this,” Sir W. J. Hooker observes, “be owing to a peculiarity in soil and other accidental circumstances?” According to the opinions of Smith, Schrader, and Sinclair, this character is sufficient to distinguish it as a species.

Habitat.—Sandy pastures near the sea, plentiful; and “in mountainous pastures and alpine precipices.”

Perennial; flowering in July.

This, Mr. Sinclair says, “has no superior merit over those species it resembles in habit, to compensate for the impoverishing effects of its creeping roots to the soil.”

**** *Glumes very unequal; glumelles with a long awn.***

4. *F. Myu'rus*, Linn. (Fig. 161.) *Wall Fescue-grass*. Panicle elongated, rather close, somewhat drooping; spikelets leaning one way; florets shorter than the awn, containing only one stamen; stem leafy in its upper part.

English Botany, t. 1412.—English Flora, vol. i. p. 143.—Hooker, British Flora, vol. i. p. 49.—Sinclair, Hort. Gram. Woburn. p. 266.—*Vul'pia Myu'rus*, Gmelin. Lindley, Synopsis, p. 314.

Root small, fibrous. *Stem* from twelve to eighteen inches high, erect, smooth, striated, leafy nearly to the top. *Leaves* short, awl-shaped, striated, and smooth. *Sheaths* close, smooth, striated. *Ligula* short, obtuse. *Inflorescence* a slightly drooping, angular, rough-branched, lax panicle, from two to five inches long. *Glumes* pointed or awned: the *outer* smallest, keeled; the *inner* keeled and ribbed. *Florets* narrow, tapering, cylindrical. *Glumelles* nearly equal: the *outer* valve ribbed, roughish towards the apex, terminating in a fine rough awn, longer than itself; the *inner* valve thin, with two lateral greenish ribs, roughish and bifid at the apex. *Stigmas* very small, feathery. *Stamen* only one. *Anther* yellow. *Fruit* long, narrow, deeply channelled on one side, downy towards the apex.

Habitat.—Walls, and barren sandy grounds; not uncommon in England,—less frequent in Scotland and Ireland.

Annual; flowering in June and July.

5. *F. bromoides*, Linn. (Fig. 162.) *barren Fescue-grass*. Panicle erect; spikelets turned to one side; florets shorter than the awn, containing only one stamen; stem leafless in the upper part.

English Botany, t. 1411.—English Flora, vol. i. p. 142.—Hooker, British Flora, vol. i. p. 49.—*Vul'pia bromoides*, Dumort. Lindley, Synopsis, p. 315.

Greatly resembling the above species, except in being much smaller. *Stem* from six to twelve inches high, naked in the upper part. *Leaves* narrow, tapering, bristle-shaped, from the inflexed edges; the upper ones shorter than the close, striated, smooth sheaths. *Ligula* very short. *Inflorescence* a short, scarcely branched panicle, sometimes racemed. *Spikelets* mostly turned to one side. *Glumes* very unequal: the larger keeled, and with two lateral ribs; the smaller keeled. *Florets* narrow, tapering, about six. *Glumelles* nearly equal: the *outer* roughish, terminating in an awn longer than itself; the *inner* with two marginal, roughish, green ribs, scarcely bifid at the apex. *Stigmas* small, feathery. *Stamen* only one. *Anther* yellow. *Fruit* long, deeply channelled on one side.

Habitat.—Walls and dry places; not very common in England and Ireland,—less so in Scotland. About Edinburgh, and Isle of Arran, on the sandy beach.

Annual; flowering in June.

6. *F. uniglu'mis*, Soland. (Fig. 163.) *single-glumed Fescue-grass*.

Panicle an erect, two-ranked raceme; florets compressed, shorter than their awn; outer valve of the glumes very small.

English Botany, t. 1430.—English Flora, vol. i. p. 144.—Hooker, British Flora, vol. i. p. 50.—*Vul'pia uniglu'mis*, Dumort. Lindley, Synopsis, p. 314.

Root fibrous. *Stem* erect, several from the same root, from six to eighteen inches high, smooth and leafy, almost to the top. *Leaves* short, acute, striated, smooth, or sometimes scattered with hairs. *Sheaths* long, striated, smooth, close. *Ligula* short, obtuse. *Inflorescence* an erect, simple, two-ranked racemose panicle; its branches short, dilated, and roughish. *Spikelets* mostly turned to one side. *Glumes* very unequal; the *outer* almost obsolete. *Florets* tapering, compressed. *Glumelles* nearly equal: the *outer* valve terminating in a roughish awn, longer than itself; the *inner* with two marginal, roughish ribs, scarcely bifid at the apex. *Stigmas* short, feathery. *Stamens* three. *Anthers* yellow. *Fruit* oblong, deeply channelled on one side.

Habitat.—On the sandy sea-coast, chiefly of Sussex. Portmarnock Sandhills, Ireland.

Biennial—*Smith*; annual—*Hooker*; flowering in June.

*** *Glumes unequal ; glumelles acute, scarcely awned.*

7. *F. calama'ria*, Smith, (Fig. 164.) *Reed Fescue-grass*. Panicle nearly erect, much branched, spreading ; spikelets oblong ; florets from three to five ; leaves linear, lanceolate.

English Botany, t. 1005.—English Flora, vol. i. p. 146.—Hooker, British Flora, vol. i. p. 50.—*Schedon'orus sylvat'icus*, Beauvis, Lindley, Synopsis, p. 313.

β. mi'nor, Hook.; smaller, with scarcely more than two perfect florets.—*Festuca decid'ua*, Smith, English Botany, t. 2266.

Root fibrous. *Stem* erect, several from the same root, from two to three feet high, round, and smooth. *Leaves* large, broad, linear, lanceolate, from six to eighteen inches long, ribbed and striated, the edges rough, and sometimes the whole leaf. *Sheaths* close, striated, roughish. *Ligula* short, torn, sometimes pointed. *Inflorescence* a nearly erect, spreading panicle ; its branches angular, repeatedly divided, and generally roughish towards the extremity. *Spikelets* oblong, mostly purplish or brown. *Glumes* unequal, narrow, lanceolate: the outer valve keeled ; the inner keeled, and with two lateral ribs. *Florets* rather distant. *Glumelles* equal: the outer valve lanceolate, with an elongated membranous point, keeled and remotely ribbed, roughish; inner thin, membranous, with two lateral smooth or roughish ribs, bifid at the extremity. *Stigmas* feathery. *Fruit* small.

Habitat.—Mountainous woods, not unfrequent.

Perennial ; flowering in June and July.

8. *F. pratensis*, Hudson, (Fig. 165.) *Meadow Fescue-grass*. Panicle nearly erect, branched, spreading ; spikelets linear, compressed ; florets numerous ; leaves linear ; root fibrous.

English Botany, t. 1592.—English Flora, vol. i. p. 148.—Hooker, British Flora, vol. i. p. 50.—Sinclair, Hort. Gram. Woburn. p. 149.—*Schedon'orus pratensis*, Beauvis, Lindley, Synopsis, p. 312.

Root fibrous, tufted. *Stems* erect, numerous, from one to two feet high, smooth, leafy. *Leaves* linear, flat, pointed, spreading, rough on the edges, and frequently on both sides of the upper ones. *Sheaths* close, smooth, and striated. *Ligula* short, obtuse, generally torn. *Inflorescence* an erect, spreading, roughish, angular, branched panicle. *Spikelets* linear-oblong, compressed. *Glumes* unequal, acute, smooth: the outer smallest, keeled ; the inner lanceolate acute, keeled, and two or four ribbed. *Florets* about eight. *Glumelles* equal: the outer valve ovate-lanceolate, acute, keeled and obscurely ribbed, and roughish towards the apex, which is membranous, sometimes cloven, and the keel elongated into a short roughish awn ; inner valve with two marginal, roughish, green ribs, bifid at the apex. *Glumellules* "with four divaricated points." *Stigmas* feathery. *Fruit* small, lanceolate.

Habitat.—Meadows and pastures, frequent.

Perennial; flowering in June and July.

The Meadow Fescue, observes Mr. Sinclair, "constitutes a very considerable portion of the herbage of all rich natural pastures and irrigated meadows; it makes excellent hay, and though a large plant, the leaves or herbage are succulent and tender, and apparently much liked by cattle, as they never form rank tufts, which is the case with the larger grasses. It does not appear to arrive at its full productive powers from seed so soon as either the Cocksfoot or Foxtail Grass, and though essential for permanent pastures, is not by itself very well adapted for the alternate husbandry, but should be combined with Cocksfoot, Rye-grass, and Rough-stalked Meadow-grass."

9. *F. ela'tior*, Linn. (Fig. 166.) *tall Fescue-grass*. Panicle large, much branched, somewhat drooping; spikelets ovate-lanceolate; fibrils numerous, somewhat awned; leaves linear-lanceolate; root with creeping stems.

English Botany, t. 1593.—English Flora, vol. i. p. 148.—Hooker, British Flora, vol. i. p. 50.—Sinclair, Hort. Gram. Woburn. p. 161.—*Schedon'orus ela'tior*, Beauvis, Lindley, Synopsis, p. 313.

Root with downy fibres, and creeping underground stems. Stems erect, stout, from three to four feet high, striated, smooth and leafy. Leaves linear-lanceolate, striated, smooth, except the margins. Sheaths very long, close, smooth, striated. Ligula short, obtuse, mostly torn. Inflorescence a large, much branched, spreading, slightly drooping panicle. Spikelets numerous, ovate-lanceolate, scarcely compressed. Glumes unequal: the outer smallest, keeled; the inner keeled, ribbed, ovate-lanceolate. Florets from eight to ten. Glumelles equal: the outer valve ovate-lanceolate, ribbed, membranous, and bifid at the point, the keel mostly terminating in a short awn; the inner valve with two green, hairy, marginal ribs. Glumellules similar to the last. Fruit ovate. Stigmas feathery.

Habitat.—Moist meadows, banks of rivers and ditches; much less frequent than the above species.

Perennial; flowering in June and July.

This is one of the best grasses that can be cultivated in clayey lands, either for the purpose of grazing or making into hay. Its herbage is abundant, and produced early in the spring, containing a considerable proportion of nutritive matter, and is eaten by most cattle.

10. *F. lolia'cea*, Linn. (Fig. 167.) *spiked Fescue-grass*. Spikelets arranged in an elongated, two-ranked spike; spikelets linear-oblong, nearly sessile, distant; florets numerous, awnless.

English Botany, t. 1821.—English Flora, vol. i. p. 147.—Hooker, British Flora, vol. i. p. 50.—Sinclair, Hort. Gram. Woburn. p. 178.—*Schedon'orus lolia'cea*, Dumort, Lindley, Synopsis, p. 313.

* *Root* fibrous. *Stem* erect, simple, from one to two feet high, smooth, and leafy. *Leaves* short, linear, acute. *Sheaths* rather long, close, smooth. *Ligula* very short. *Inflorescence* a simple, slightly drooping, two-ranked raceme, from three to eight inches long. *Rachis* waved, angular, alternately channelled, in which the spikes have been placed in an early stage of their growth, the angles roughish. *Spikelets* nearly sessile, linear-oblong, rather distant, about six-flowered. *Glumes* unequal, lanceolate, acute, seven-ribbed; the inner valve smallest, sometimes wanting. *Glumelles* nearly equal, ovate-lanceolate, compressed, membranous towards the point, and slightly five-ribbed, smooth, except a slight roughness on the ribs. *Stigmas* densely feathery. *Fruit* ovate, but seldom perfected.

Habitat.—In meadows and pastures, especially such as are occasionally overflowed; common.

Perennial; flowering in June and July.

This grass at first sight might be mistaken for *Lo'tium perenne*, (Rye-grass,) from which, however, it is readily distinguished by having two glumes, while that just named has only one. This grass, which grows in similar situations to the Rye-grass, is much more valuable for agricultural purposes, affording a greater proportion of nutritive matter, and producing its herbage in greater abundance; it comes also earlier in the spring, and improves by age—qualities which strongly recommend it for cultivation in place of the Rye-grass; but unfortunately the seed is seldom perfected, and its propagation by the division of its roots would be too expensive a process.

GENUS XL. BRO'MUS. LINN. *Brome-grass*.

GEN. CHAR. *Panicle* loose. *Spikelets* many-flowered. *Glumes* two, unequal. *Glumelles* two, the outer awned below the bifid apex. —Name from “βρωμος, given by the Greeks to a kind of oat, and that again from βρωμα, food.”—Hook.

* *Spikelets* lanceolate; *glumes* very unequal, lanceolate-acute.

1. *B. giganteus*, Vill. (Fig. 168.) *tall Brome-grass*. *Panicle* large, branched, spreading, drooping towards one side; *spikelets* compressed, from three to six-flowered, ribbed; *awn* longer than the *floret*; *leaves* linear-lanceolate.

Hooker, British Flora, vol. i. p. 50.—*Festuca gigantea*, English Botany, t. 1820.—English Flora, vol. i. p. 144.—Lindley, Synopsis, p. 314.—Sinclair, Hort. Gram. Woburn. p. 376.

β. *triflorus*, Hook.; a smaller and more erect plant; *spikelets* three-flowered.—*Festuca triflora*, E. Bot. t. 1918.

Root of many strong, more or less downy fibres. *Stem* erect, simple, round, smooth, striated, and leafy, from three to four feet high. *Leaves* broad, linear-lanceolate, nearly erect, ribbed, rough on the upper side and margins, pale and smooth beneath. *Sheaths* long, close, smooth, striated. *Ligula* very short, mostly torn, with a projecting portion on each side, which clasps the stem. *Inflorescence* a large, compound, spreading panicle, its branches angular and rough, drooping on one side. *Spikelets* ovate-lanceolate, compressed, from three to six-flowered. *Glumes* very unequal: the *outer* small, frequently awl-shaped, keeled; the *inner* lanceolate, acute, the keel and two lateral ribs rough. *Glumelles* nearly equal: the *outer* lanceolate, smooth, membranous, and obscurely ribbed towards the extremity, the apex bifid, *awn* long, inserted below the point; *inner* valve membranous, with two lateral downy ribs, the apex bifid. *Stigmas* feathery. *Fruit* oblong.

Habitat.—Moist shady woods and hedges. β . In drier situations. Saham, Norfolk; and near Forfar, in Scotland.

Perennial; flowering in July and August.

This is a coarse grass, containing but a small proportion of nutritive matter; and although a native of woods and shady situations, it will flourish in open exposed places; but it appears to possess no properties to render it worthy the notice of the agriculturist.

2. *B. as'per*, Linn. (Fig. 169.) *hairy Wood Brome-grass*. Panicle branched, drooping; spikelets compressed; florets remote, hairy; awn shorter than the floret; leaves uniform, the lower ones hairy.

English Botany, t. 1172.—English Flora, vol. i. p. 158.—Lindley, Synopsis, p. 312.—Hooker, British Flora, vol. i. p. 54.

Root of many strong branched fibres. *Stem* erect, simple, striated, round, smooth, and leafy upwards, from four to six feet high. *Leaves* broad, spreading, lanceolate, rough, the lower ones hairy, many-ribbed. *Sheaths* long, close, striated, and more or less clothed with deflexed hairs. *Ligula* short, obtuse. *Inflorescence* a very lax, wide-spreading, drooping panicle, its branches slender, subdivided, rough. *Spikelets* compressed, about an inch long. *Florets* about eight, rather remote. *Glumes* very unequal, sharply pointed, rough: the *outer* valve smallest, keeled; the *inner* keeled, and with two lateral ribs. *Glumelles* nearly equal: the *outer* lanceolate, ribbed, roughish, and hairy, membranous on the edges towards the extremity, and bifid at the apex; the *awn* stout, straight, rough, shorter, or about the length of the valve; the *inner* valve shortest, obtuse, its lateral ribs finely hairy. *Stigmas* densely feathery. *Fruit* linear, blunt, and downy towards the summit, furrowed on one side.

Habitat.—Moist woods and hedges, not very common.

Annual or biennial; flowering from June to August.



164.

Festuca calamaria.



165.

Festuca pratensis.



166.

Festuca elatior.



167.

Festuca loliacea.



168.

Bromus giganteus.



169.

Bromus asper.





170.

Bromus sterilis.



171.

Bromus diandrus.



172.

Bromus erectus.



173.

Bromus arvensis.



174.

Bromus squarrosus.



175.

Bromus secalinus.

3. *B. ster'ilis*, Linn. (Fig. 170.) *barren Brome-grass*. Panicle scarcely branched, drooping; spikelets compressed on long stalks; florets remote, rough; awn longer than the floret; leaves flat, linear, downy.

English Botany, t. 1030.—English Flora, vol. i. p. 159.—Lindley, Synopsis, p. 312.—Hooker, British Flora, vol. i. p. 51.—Sinclair, Hort. Gram. Woburn. p. 296.

Root small, fibrous, woolly. *Stem* from one to two feet high, round, slender, striated, leafy even to the panicle. *Leaves* narrow, ribbed, soft and downy, with a few scattered hairs towards the base. *Sheaths* rather short, close, striated, downy, and more or less clothed with deflexed hairs. *Ligula* short, mostly torn. *Inflorescence* a large, gracefully drooping, wide-spreading panicle; its branches long, slender, rough, angular, scarcely subdivided, dilated near the extremity. *Spikelets* about an inch long, drooping, compressed, about eight-flowered, purplish towards the extremity. *Glumes* very unequal, rough: the *outer* keeled, awl-shaped; the *inner* lanceolate, membranous towards the extremity, keeled, and with two lateral ribs. *Glumes* very unequal, rough: the *outer* valve long, narrow, membranous on the upper part of the margin, and bifid at the apex, the keel and numerous ribs uniting and forming a long, stiff, rough *awn*; the *inner* valve thin, pale, membranous, its two green lateral ribs ciliated, with short white hairs. *Stigmas* small, feathery. *Fruit* long, narrow, hairy at the apex, deeply furrowed on one side.

Habitat.—Very common in waste places, hedges, and shady situations.

Annual; flowering in June and July.

The name *sterilis*, which distinguishes this grass, is not given to it from its producing but a small quantity of seed, as supposed by some authors, but from the innutritious quality of its herbage, and its inutility as food for cattle.

4. *B. dian'drus*, Curt. (Fig. 171.) *upright annual Brome-grass*. Panicle erect, slightly branched and spreading; spikelets compressed on short stalks; florets remote, scarcely rough; awn as long as the floret; stamens mostly two; leaves nearly smooth.

English Botany, t. 1006.—English Flora, vol. i. p. 160.—Lindley, Synopsis, p. 312.—Hooker, British Flora, vol. i. p. 51.—Sinclair, Hort. Gram. Woburn. p. 297.—*Bro'mus Madriten'sis*, Linn.

Root small, fibrous. *Stem* erect, several from the same root, from twelve to eighteen inches high, round, striated, smooth, and leafy. *Leaves* narrow, smooth, or downy. *Sheaths* close, striated, smooth, or sometimes downy. *Ligula* short, mostly torn. *Inflorescence* an erect, somewhat spreading panicle, its branches dilated towards the extremity, short, stiff, and roughish, scarcely ever subdivided. *Spikelets*

erect, mostly tinged with purple or brown, about an inch long, and eight-flowered, roughish. *Florets* inserted upon the flower-stalk by a swollen base. *Glumes* very unequal, roughish: the *outer* keeled, awl-shaped; the *inner* with a keel and two lateral ribs. *Glumelles* unequal: the *outer* valve long, narrow, the margin membranous towards the extremity, the apex bifid, having four lateral ribs and occasional intermediate ones, the keel terminating in a long rough awn. *Stamens* two, hence its specific name. *Stigmas* feathery. *Fruit* very long, narrow, channelled on one side, the apex hairy.

Habitat.—Rare, on dry sandy ground and on walls, principally in the South of England. About Edinburgh, Scotland—*Mr. Arnott*.

Annual; flowering in June and July.

5. *B. erectus*, Hudson, (Fig. 172.) *upright Brome-grass*. Panicle erect, slightly branched; spikelets compressed, smooth; awn about the length of the rather remote florets; root leaves very narrow and ciliated.

English Botany, t. 471.—English Flora, vol. i. p. 157.—Lindley, Synopsis, p. 312.—Hooker, British Flora, vol. i. p. 52.—Sinclair, Hort. Gram. Woburn. p. 293.

Root strong, fibrous. *Stem* erect, smooth, leafy, slender, from two to three feet high. *Leaves* numerous: the upper ones broad, linear, nearly smooth; the lower ones narrower, clothed with hairs. *Sheaths* close, striated, downy, and more or less hairy. *Ligula* short, mostly torn. *Inflorescence* an erect, rather close, more or less branched panicle. *Spikelets* erect, about an inch long, nearly smooth. *Florets* mostly seven, purplish, spreading when in flower. *Glumes* very unequal: the *outer* awl-shaped and keeled; the *inner* lanceolate, acute, keeled and ribbed. *Glumelles* equal, acute: the *outer* one lanceolate, its margins membranous, the apex bifid, smooth or scabrous at the back, with two strong ribs and one or two slight intermediate ones, the keel tapering into a straight awn. *Stigmas* feathery. *Anthers* yellowish saffron colour.

This plant has much the habit of *Brachypodium sylvaticum*.

Habitat.—In fields and by road-sides, especially in a sandy soil over chalk, not common. About Edinburgh, frequent. On a calcareous soil, Lands of Santry and Coolock, Ireland—*Mr. J. White*.

Perennial; flowering in July.

6. *B. arvensis*, Linn. (Fig. 173.) *taper Field Brome-grass*. Panicle spreading, at length drooping, its branches subdivided; spikelets compressed, smooth; awn about the length of the imbricated florets; leaves hairy.

English Botany, t. 1984.—English Flora, vol. i. p. 156.—Lindley, Synopsis, p. 312.—Hooker, British Flora, vol. i. p. 52.—Sinclair, Hort. Gram. Woburn. p. 173.

Root fibrous. *Stem* sometimes procumbent at the base, and rooting from the lower joints; the upper part erect, round, striated, slender, smooth, leafy. *Leaves* spreading, many-ribbed, either nearly smooth or clothed with short deflexed pubescence. *Sheaths* close, striated, nearly smooth, or clothed with deflexed pubescence. *Ligula* short, obtuse. *Inflorescence* a rather large, partly whorled, drooping, at length pendulous panicle; its branches roughish, subdivided, and spreading; the lowermost whorl surrounded at the base with various-sized notched scales. *Spikelets* smooth or minutely downy, purplish. *Florets* about eight, imbricated. *Glumes* unequal, sharp-pointed. *Glumelles* nearly equal: the *outer* with four lateral ribs, and a keel which terminates in a purplish rough awn about the length of the valve; the *inner* with two green lateral ciliated ribs. *Stigmas* feathery. *Anthers* purple.

Habitat.—Corn-fields and rich meadows, rare. Durham, near the coast. Less rare in Scotland. Near Cullenagh, Queen's County, and fields near Sandy Mount, Ireland.

Annual; flowering in June and July.

****** *Spikelets ovate-lanceolate; glumes unequal, ovate-lanceolate.*

7. *B. squarrosus*, Linn. (Fig. 174.) *Corn Brome-grass*. Panicle drooping, scarcely branched; spikelets somewhat compressed; florets imbricated, nearly smooth; awn the length of the floret, spreading; leaves downy.

English Botany, t. 1885.—English Flora, vol. i. p. 155.—Lindley, Synopsis, p. 311.—Hooker, British Flora, vol. i. p. 52.

Root small, fibrous. *Stem* erect, simple, about a foot high, smooth, striated. *Leaves* narrow, linear, striated, and more or less clothed with soft pubescence. *Sheaths* short, covered with deflexed hairs. *Ligula* short, obtuse, hairy. *Inflorescence* a short, nearly simple, drooping panicle. *Spikelets* few, large, ovate, somewhat compressed, about an inch long. *Florets* imbricated, compressed, about twelve. *Glumes* unequal, ribbed: the *outer* lanceolate acute; the *inner* ovate lanceolate. *Glumelles* nearly equal: the *outer* ovate oblong, the margins somewhat inflexed, the apex bifid, ribs prominent, three or four on each side; the *awn* inserted between the bifid extremity, about as long as the valve, strong, rough, twisted, and remarkably spreading; *inner* valve obtuse, its green lateral ribs strongly ciliated. *Stigmas* feathery. *Fruit* long, narrow, channelled on one side, and hairy at the apex.

Habitat.—Rare. Corn-fields in the South of England. Scotland—Mr. G. Don. "Not indigenous"—Hooker.

Annual; flowering in June and July.

8. *B. secalinus*, Linn. (Fig. 175.) *smooth Rye Brome-grass*. Panicle spreading, scarcely branched; spikelets compressed; florets about

ten, smooth, somewhat cylindrical, remote, longer than the rough awn.

English Botany, t. 1171.—English Flora, vol. i. p. 151.—Lindley, Synopsis, p. 311.—Hooker, British Flora, vol. i. p. 51.

Root of numerous downy fibres. *Stem* erect, smooth, round, simple, from two to three feet high. *Leaves* long, broad, striated, rough and hairy above, beneath smoother. *Sheaths* short, close, smooth, striated. *Ligula* very short, obtuse, torn. *Inflorescence* a large, erect, or slightly drooping panicle: the lower branches half whorled, and subdivided; the upper mostly short and simple; all roughish and angular. *Spikelets* ovate-lanceolate, nearly erect when in flower, but drooping when in seed. *Florets* about ten, at first closely imbricated, afterwards more remote, and nearly cylindrical, by the sides becoming more inflexed. *Glumes* unequal, the margins pale and membranous; the *outer* smallest, keeled, and each side with two prominent ribs; the *inner* valve ovate-lanceolate, keeled, and with several more or less distinct ribs. *Glumelles* equal: the *outer* ovate oblong, the margins and bifid extremity membranous, the sides inflexed, smooth, or the extremity sometimes roughish, with minute points; the three ribs on each side, as well as the keel, obscurely marked; *awn* frequently shorter than the valve, rough and waved: *inner* valve membranous, with two lateral green ribs, ciliated with white hairs. *Stigmas* feathery. *Seed* oblong, channelled on one side, the apex downy.

Habitat.—Corn-fields, not uncommon.

Annual; flowering from July to August.

In some countries—as Hanover and Germany—this species of grass grows in such abundance amongst the Wheat and Rye, as to render the crops of very inferior value. The flour produced from its seed is small in quantity, and is said to impart a bitter taste to the bread, and to produce effects similar to *Lo'lium temulen'tum*. It was an opinion entertained by the ancients, that Wheat and other grain degenerated into grasses, and that this and the following species have gradually lost their claim amongst the grain-bearing grasses, and to have degenerated from Rye; hence they were called *smooth* and *downy* Rye-grasses.

9. *B. veluti'nus*, Schrad. (Fig. 176.) *downy Brome-grass*. “Panicle spreading, scarcely subdivided; spikelets of from ten to fifteen crowded, elliptical, downy florets; awn as long as the glumes; leaves slightly hairy.”—Smith.

English Flora, vol. i. p. 152.—Lindley, Synopsis, p. 311.—Hooker, British Flora, vol. i. p. 51.—*Bro'mus multiflo'rus*, English Botany, t. 1884.

β. *mi'nor*, Hook.; “sheaths of the leaves densely clothed with deflexed hairs.”—Hooker, British Flora, vol. i. p. 52.



176.

Bromus velutinus.



177.

Bromus mollis.



178.

Bromus racemosus.



180.

Avena strigosa.



179.

Avena fatua.

Stem smooth. The lower *leaves* naked towards the base on the under side, above on the margin somewhat hairy; the upper ones clothed with a downy pubescence on the under side, and hairy above; all rough on the margin. *Inflorescence* a wide-spreading, nearly simple panicle; its branches rough; its *spikelets* ovate-lanceolate, compressed. *Florets* never becoming separated or cylindrical, but remaining contiguous or crowded. *Glumes*, as well as the outer valve of the *glumelles*, very pubescent. *Awn* longer than the florets, at length spreading. "The variety found by Mr. Johns is scarcely a span high, and has the glumes very soft with silky down, and the sheaths of the leaves densely clothed with copious soft deflexed hairs"—*Hook.*

Habitat.—Corn-fields. Rare. About Edinburgh—*Smith. β.* Sandy ground by the sea, near the Soap Rock, Lizard, Cornwall—*Mr. C. A. Johns.*

Annual; flowering in June and July.

We have not been able to obtain other than cultivated specimens of this plant: the description is taken from *Smith.* It is nearly allied to *B. secalinus.*

10. *B. mol'lis*, Linn. (Fig. 177.) soft *Brome-grass.* Panicle erect, branched, rather close; spikelets slightly compressed; florets imbricated, downy; awn straight, about as long as the glume; leaves very soft and downy.

English Botany, t. 1078.—English Flora, vol. i. p. 153.—Lindley, Synopsis, p. 311.—Hooker, British Flora, vol. i. p. 52.—Sinclair, Hort. Gram. Woburn. p. 176.

Root fibrous. *Stem* erect, from one to two or three feet high, striated, smooth or downy. *Leaves* linear, striated, very soft and downy, as well as the close *sheaths.* *Ligula* short, obtuse, torn. *Inflorescence* an erect, branched panicle, close, except when in flower, slightly spreading, its branches rough and angular. *Spikelets* numerous, nearly erect, slightly compressed, of from five to ten imbricated downy florets. *Glumes* unequal, keeled, numerous ribbed, and downy; the margins membranous, pale. *Glumelles* equal: the outer valve ovate-oblong, numerous ribbed; the margins and bifid extremity membranous, concave, downy; *awn* straight, roughish, about the length of the valve: inner valve membranous, obtuse, with two green, ciliated, lateral ribs closely attached to the long, narrow, channelled seed. *Stigmas* feathery.

Habitat.—Fields, waste places, banks, and old walls; very common.

Biennial; flowering in June.

This grass, which is extremely common, especially in poor exhausted soil, is, like all other of the *Brome-grasses*, of little or no utility to the agriculturist. Their herbage is coarse and innutritious, and the quantity which they produce is mostly small, and refused by almost all cattle.

11. *B. racemo'sus*, Linn. (Fig. 178.) *smooth Brome-grass*. Panicle erect; stalks unbranched; spikelets slightly compressed; florets imbricated, smooth; awns straight, about as long as the glumes; leaves slightly hairy.

English Botany, t. 1079.—English Flora, vol. i. p. 154.—Lindley, Synopsis, p. 311.—Hooker, British Flora, vol. i. p. 52.

Root small, fibrous. *Stem* erect, from one to two feet high, finely striated, smooth, or slightly downy. *Leaves* linear, narrow, acuminate at the point, striated, and slightly hairy. *Sheaths* rather long, close, striated, smooth, or slightly downy. *Ligula* short, obtuse, torn. *Inflorescence* an erect or slightly drooping, close, simple panicle; its branches simple, very rarely divided, angular, and slightly downy. *Spikelets* similar to the last, except being quite smooth and less numerous ribbed: this, together with the smaller and nearly unbranched panicle, appear to be the only characters by which they can be distinguished from each other; and it is doubtful if this is any more than a variety depending upon difference in the situation of growth.

Habitat.—Fields and road-sides; not unfrequent.

Annual or biennial; flowering in June and July.

GENUS XLI. AVE'NA. LINN. *Oat-grass*.

GEN. CHAR. *Panicle* loose. *Spikelets* two or more flowered. *Glumes* two, nearly equal. *Glumelles* two, lanceolate, nearly equal; the outer bifid at the apex, and bearing a twisted dorsal awn.—
“Name of doubtful origin; the ancients applied it to the *Brome-grass*. Oat, Theis tells us, comes from the Celtic word *atan*, the oat; and that again from *etan*, to eat.”—Hook.

1. *A. fat'ua*, Linn. (Fig. 179.) *wild Oat*. Panicle erect, spreading; florets about three, roughish, and hairy at the base, shorter than the glumes; awn long and stout.

English Botany, t. 2221.—English Flora, vol. i. p. 163.—Lindley, Synopsis, p. 310.—Hooker, British Flora, vol. i. p. 53.

Root fibrous, rooting from the lower joints. *Stem* erect, round, smooth, striated, three or four feet high, leafy below, naked above. *Leaves* broad, linear, flat, acuminate, numerous ribbed and striated, rough, and sometimes hairy. *Sheaths* long, close, striated, thin, smooth, or slightly hairy. *Ligula* short, obtuse, torn. *Inflorescence* a large, spreading panicle; its branches in half alternate whorls, slender, angular, rough, swollen at the base and upper extremity, simple or branched. *Spikelets* large, more or less drooping. *Glumes* large, membranous, green, lanceolate, with a long point, which, as well as the margins, are shining and pale; ribs numerous, prominent. *Flo-*

rets about three, shorter than the glumes, tawny, at length brown. *Glumelles* unequal: the *outer* thick and coriaceous, lanceolate, the margins and long tapering point bifid at the apex, membranous, numerous ribbed, roughish, the base clothed with long, flat, twisted, pale-brown, and glossy hairs; *awn* from below the middle of the back, about two inches long, stout and roughish, with minute points, the lower part twisted: *inner* valve lanceolate, with two marginal, finely ciliated ribs. *Stigmas* feathery. *Fruit* downy, enveloped in the hardened *glumelles*.

Habitat.—Corn-fields; not unfrequent.

Annual; flowering from June to August.

The awn of this species forms an excellent hygrometer, but is not so large, or so sensible to the changes in the moisture of the atmosphere, as that of the exotic *Avena sterilis*, which is kept constantly in an apparent spontaneous motion, and has some resemblance to an insect; hence it has received the name of "animal Oat." The florets are sometimes used by anglers in the place of artificial flies. It is sometimes mistaken for the common cultivated Oat, *A. sativa*, which has one or more of its upper florets imperfect and awnless; the florets are also without hairs at the base, and the awn is not so stout or so long. The Oat is the grain grown in cold countries, where it is considered the bread-corn, and used as the food of man—as in some parts of England and Scotland, part of Siberia, and the northern parts of Norway and Sweden; but in warmer latitudes, the ears become so small, and the grain so poor, as to be scarcely worth cultivation. The grain deprived of the skin is known by the name of "groats," of which there are several kinds, as the common, split, patent, and Embden; ground down they form meal or oatmeal, which is variously prepared as an article of diet, or used medicinally. The great productiveness of the Oat, like that of Wheat, is sometimes very remarkable. In Turner's "Sacred History of the World," it is stated, that "an Oat-stalk taken from a field at Sealand, near Chester, had 237 grains. Another, on a field lately part of Cockermouth Common, had 251. A wild Oat at Milton was ten feet high, and had 150 grains. One ear at Mansfield was fifteen inches long, and contained 283. In 1824 a single grain of Oats having fallen on a quantity of burnt clay, produced 19 stems and 2945 grains."

2. *A. strigosa*, Schrad. (Fig. 180.) *bristle-pointed Oat*. Panicle erect, the branches all turned to one side; florets two, as long as the glumes, the outer valve terminated by two bristles, the back with a long awn.

English Botany, t. 1226.—English Flora, vol. i. p. 163.—Lindley, Synopsis, p. 310.—Hooker, British Flora, vol. i. p. 53.

Root fibrous. *Stem* erect, from two to three feet high, smooth, striated, and leafy. *Leaves* broadly linear, acute, striated, a glaucous-

green, roughish. *Sheaths* close, striated, and smooth. *Ligula* obtuse-torn. *Inflorescence* an erect, rather close panicle; its branches scarcely subdivided, rough, slender, all turned to one side, abruptly swollen at the extremity. *Spikelets* two, very rarely three or four-flowered. *Glumes* nearly equal, thin, membranous, smooth, except a slight roughness on its numerous ribs; the margins and point white, very thin. *Florets* elevated on a short smooth footstalk, that of the second having near its extremity a lateral tuft of hairs. *Glumelles* unequal: the *outer* concave, lanceolate, bifid at the extremity; the points long, narrow, terminating in two rough purplish awns, besides the dorsal awn, which is nearly as long again as the valve, and inserted above its middle; the valve is smooth, sometimes slightly scattered over with flat twisted hairs, obscurely ribbed, except towards the point, where it is also roughish: *inner* valve lanceolate, flat, with two lateral downy ribs and a bifid apex. *Stigmas* short, feathery.

Habitat.—Frequent in corn-fields in England, Scotland, and Wales. Near Cork, Ireland—*Mr. J. Drummond*.

Annual; flowering in June and July.

The habit and size of this species have a greater resemblance to the cultivated Oat, *A. sativa*, than the last; but its oblong, rather crowded, one-sided panicle, and the awned extremity of the florets, essentially distinguish it from all other species, and give the whole panicle a remarkably strigose or bristly appearance; hence its specific name.

3. *A. pratensis*, Linn. (Fig. 181.) *narrow-leaved Oat-grass*. Panicle an erect, nearly simple raceme; spikelets erect; florets from three to five, longer than the glumes; leaves long, narrow, smooth except on the margins, the lower ones with the margins closely rolled inwards.

English Botany, t. 1204.—English Flora, vol. i. p. 155.—Lindley, Synopsis, p. 310.—Hooker, British Flora, vol. i. p. 53.—Sinclair, Hort. Gram. Woburn. p. 312.

Root fibrous, tufted. *Stems* erect, several from the same root, tufted, from one to three feet high, striated, smooth, with a single joint near the base, from whence arises the upper and almost only leaf of the stem, which is very short, narrow, striated; the *sheath* very long, close, deeply striated, smooth, except a slight roughness upon the edge of the stria. The lower leaves long, tufted, narrow; the margins closely rolled inwards, and minutely serrated; their sheaths short, and enveloped in the withered remains of the older ones. *Inflorescence* an erect, simple raceme, or a slightly branched panicle; the upper spikelets sessile, the lower on simple or branched, angular, and rough stalks. *Glumes* unequal, lanceolate, with a long narrow point, frequently terminating in a roughish awn, each with two smooth lateral ribs and a keel, rough towards the extremity. *Florets* from three to five or six, each upon a short stalk, the upper part clothed with short, stiff, white, shining hairs.



181.

Avena pratensis.



182.

Avena alpina.



183.

Avena planiculmis.



184.

Avena pubescens.



185.

Avena flavescens.



186.

Dactylis glomerata.

Glumelles nearly equal, lanceolate; the *outer* smooth, scarcely ribbed except towards the apex, where it is membranous and pale, often torn; the lower part green, variegated with purple, as well as the glumes; awn from above the middle of the back, purplish, with a white slender point. *Glumellules* long, lanceolate; the *inner* valve thin, white, and membranous. *Stigmas* short and feathery.

Habitat.—Dry pastures and mountainous places in a chalky or calcareous district, as well as in meadows of a clayey soil; not uncommon.

Perennial; flowering in July.

4. *A. alpina*, Smith, (Fig. 182.) *great Alpine Oat-grass*. Panicle erect, slightly branched; spikelets erect; florets five or six, longer than the glumes; leaves roughish, broad, flat, linear, acuminate; the margins rough; sheaths and stem round.

English Flora, vol. i. p. 165.—Lindley, Synopsis, p. 310.—Hooker, British Flora, vol. i. p. 53.—*Avena planiculmis*, English Botany, t. 2141.

Root fibrous, downy, tufted. *Stem* erect, about two feet high, round, smooth, striated, leafy below. *Leaves* linear, broad, flat, striated, which as well as the edges are rough, with minute points; the lower ones folded, not rolled inwards. *Sheaths* round, close, deeply striated, rough; the upper ones long; the lower very short. *Ligula* acute, torn. *Inflorescence* an erect, rather close panicle, from three to four inches long; its branches angular, rough, simple or subdivided, tumid at the extremity. *Spikelets* erect, often an inch long. *Glumes* lanceolate, unequal, membranous; the margins and acute points thin and pale; the two lateral ribs and keel roughish. *Florets* five or six, rather remote, each upon a smooth footstalk, except a tuft of stiff, white, shining hairs, which are slightly decurrent. *Glumelles* lanceolate: the *outer* with five rough ribs; the apex deeply cloven; the colour a pale yellowish-green, variegated with brown: awn long and tapering, rough, brown, arising from about the middle of the valve: *inner* valve thin, white, membranous, minutely downy, the point acute. *Stigmas* short, feathery.

Habitat.—Rocky places on mountains; rare?

Perennial; flowering in June and July.

This species is nearly allied to the last, from which it is distinguished by its larger and more compound panicle, its stouter habit, and broader, flatter, and rougher leaves.

5. *A. planiculmis*, Schrad. (Fig. 183.) *flat-stemmed Oat-grass*. Panicle erect, branched; spikelets erect; florets from five to seven, much longer than the glumes; leaves broadly linear, suddenly acute, flat, minutely serrated, rough, as well as the flat, sharply-keeled sheaths; lower part of the stem slightly compressed, two-edged.

Hooker, British Flora, vol. i. p. 53.—Lindley, Synopsis, Supplement, p. 333.—English Botany, Supplement, t. 2684.

Root fibrous. *Stem* erect, stout, compressed, especially below, striated and rough, about three feet high. *Sheaths* long, close, remarkably compressed and sharply keeled, strongly striated, and very rough. *Leaves* broad, flat, nearly of the same width throughout, with a broad, acute, sharp point, rough, the margins serrated with sharp cartilaginous teeth, striated, and at the back having a remarkably sharp, thin, projecting keel, the upper leaves very short. *Ligula* pale, thin, and membranous: those of the upper leaves lanceolate acute; of the lower oblong, mostly torn. *Inflorescence* an erect, spreading panicle, about four inches long; its branches rough and angular, scarcely subdivided, arising in alternate half-whorls. *Spikelets* erect, long, close, linear, afterwards spreading, and flattish. *Glumes* lanceolate-acute, unequal, pale, thin, and membranous: the *outer* smallest, with a rough keel; the *inner* with two lateral rough ribs and keel. *Florets* from five to seven, rather remote, each (except the lower one) upon a roughish footstalk, and having towards the top a tuft of white shining hairs. *Glumelles* unequal: the *outer* obscurely four-ribbed and keeled, roughish, variegated with green purple and white; the upper part pale, thin, and membranous, often torn at the extremity, the keel above the middle of the valve terminating in a long, slender, rough, twisted awn; *inner* valve thin, pale, and membranous, with two slender, downy, lateral ribs. *Stigmas* loose, feathery. *Anther* long, narrow, yellow.

Habitat.—Glen Sannox, on the ascent of Goat-fell from Loch Rannoch, Isle of Arran, Scotland—Mr. Stuart Murray.

Perennial; flowering in July.

For specimens of this rare and distinct species of grass, I am indebted to the kindness of Mr. Murray, who had the good fortune to discover it in one of his botanical excursions on the interesting Isle of Arran during the summer of 1826, and who has since that time grown it in the Glasgow Botanic Garden, where it has remained unaltered in all its characters.

6. *A. pubescens*, Linn. (Fig. 184.) *downy Oat-grass*. Panicle erect, nearly simple; spikelets erect; florets about three, rather longer than the glumes; leaves flat, downy, the margins smooth.

English Botany, t. 1640.—English Flora, vol. i. p. 164.—Hooker, British Flora, vol. i. p. 54.—Sinclair, Hort. Gram. Woburn. p. 285.—*Trisetum pubescens*, Pers. Lindley, Synopsis, p. 308.

Root fibrous, and somewhat creeping. *Stem* erect, except at the base, from one to three feet high, round, smooth, simple, leafy. *Leaves* flat, spreading, short, linear, acute, hairy. *Sheaths* long, close, striated, the upper ones nearly smooth, the lower hairy. *Ligula* of the lower leaves short and acute; of the upper oblong, and mostly torn. *Inflo*-

rescence an erect, long, slightly branched panicle; its branches arising in alternate half-whorls, slightly angular, and roughish. *Spikelets* erect, spreading when in flower. *Glumes* unequal, lanceolate: the *outer* smallest, keeled; the *inner* keeled, and with two lateral ribs. *Florets* two or three, each on a short footstalk, densely clothed with shining, white, rigid hairs; the upper one mostly imperfect, often only a footstalk terminating in a tuft of hairs. *Glumelles* lanceolate, unequal: the *outer* longest, obscurely five-ribbed, variegated with green and purple; the upper part thin and membranous, white and shining, jagged at the extremity; *awn* arising from above the middle, and about as long again: *inner* valve membranous, folded, the apex bifid. *Stigmas* protruding, densely feathery.

Habitat.—Dry pastures, most abundant; on a chalk or limestone soil, not uncommon.

Perennial; flowering in June and July.

This grass possesses considerable merit as forming a part of the grass of permanent pastures in a dry soil: it is hardy, and very productive; but the nutritive matter which it affords, observes Mr. Sinclair, contains a greater proportion of the bitter extractive principle than the nutritive matter of those grasses that affect a similar soil, which lessens its merits in those respects, and must prevent its being employed in any considerable quantity as a constituent of a mixture of grasses for laying down such soils to grass.

7. *A. flaves'cens*, Linn. (Fig. 185.) *yellow Oat-grass*. Panicle erect, loose, much branched; florets about three, equal in length to the unequal glumes; the outer valve with two terminal bristles; leaves flat, slightly downy.

English Botany, t. 952.—English Flora, vol. i. p. 166.—Hooker, British Flora, vol. i. p. 54.—Sinclair, Hort. Gram. Woburn. p. 161.—*Trisetum flaves'cens*, Beauv. Lindley, Synopsis, p. 309.

Root fibrous, with more or less creeping *underground stems*. *Stem* erect, from one to three feet high, smooth, except occasionally hairy about the joints, finely striated, slender, leafy. *Leaves* linear, narrow, flat, tapering at the point, striated, hairy, especially on the upper side. *Sheaths* close, striated, more or less scattered with deflexed hairs. *Ligula* very short. *Inflorescence* an erect, rather close panicle; its branches arising in alternate half-whorls, long, slender, angular, roughish, and repeatedly subdivided. *Spikelets* numerous, small, of a shining yellowish-green. *Glumes* unequal, lanceolate, membranous except about the keel and ribs: the *outer* valve smallest, with a rough keel; the *inner* with a rough keel, and two lateral ribs. *Florets* from two to four, longer than the outer valve of the glumes, each elevated on a short hairy footstalk. *Glumelles* nearly equal: the *outer* valve with membranous margins, from three to five-ribbed; the apex bifid, terminated by two short, roughish awns; the roughish dorsal *awn* from

above the middle of the valve spreading : *inner* valve pale and membranous, with two lateral roughish ribs ; the apex bifid. *Stigmas* protruding, feathery.

Habitat.—Dry meadows, pastures, and heathy places ; frequent.

Perennial ; flowering in June and July.

This grass will grow in almost all kinds of soil and situation, from the dry upland heath to the moist irrigated meadow ; it prefers, however, a dry calcareous soil, where it is the most productive and useful, and is always found a component of the grasses in the richest meadow pastures : but it never is so productive when cultivated alone, as when mixed with other grasses. The nutritive matter which it contains is combined with a considerable proportion of bitter principle, which renders it very agreeable to cattle, especially in combination with other grasses containing a less quantity.

GENUS XLII. DAC'TYLIS. LINN. *Cock's-foot-grass*.

GEN. CHAR. *Panicle* loose or contracted ; branches solitary, the lower ones long, the upper very short. *Spikelets* clustered, three or four-flowered. *Glumes* two, unequal. *Glumelles* two, lanceolate, nearly equal ; the *outer* with a short awn.—Name from δακτυλος, a *finger* or *foot*.

1. *D. glomerata*, Linn. (Fig. 186.) *rough Cock's-foot-grass*. *Spikelets* in dense, globular tufts, turned to one side ; leaves flat, roughish.

English Botany, t. 335.—English Flora, vol. i. p. 134.—Lindley, Synopsis, p. 310.—Hooker, British Flora, vol. i. p. 48.—Sinclair, Hort. Gram. Woburn. p. 136.

Root with long stout fibres, tufted. *Stem* erect, or bent in the lower part, from one to three feet high, rough, especially towards the top, leafy, particularly in the lower part. *Leaves* linear, flat, with a tapering point, dull green, striated, and roughish. *Sheaths* close, striated, somewhat compressed and keeled, roughish. *Ligula* elongated, embracing the stem, mostly torn. *Inflorescence* a large, one-sided panicle ; its branches arising singly on alternate sides of the stem, rough and angular, the lower long and mostly spreading, the upper short, each bearing a dense ovate or globular tuft of crowded spikelets all turned to one side. *Spikelets* three or four-flowered. *Glumes* unequal, membranous, lanceolate, the point long, sometimes awned, smooth except on the keel ; the *outer* keeled only ; the *inner* keeled, and with two lateral ribs. *Florets* compressed, on short smooth footstalks. *Glumelles* equal : the *outer* valve lanceolate, cartilaginous, with a narrow, pale, membranous margin, four lateral ribs, and a rough keel, terminating between the bifid apex in a short awn ; *inner* valve membranous,

with two lateral, green, roughish ribs, and a bifid apex. *Stigmas* spreading, feathery. *Anther* yellow, brown, or purplish.

Specimens may occasionally be observed, varying considerably from the general appearance of the plant; having a short, dense, scarcely branched panicle, with the outer valve of the glumella much elongated.

Habitat.—Meadows, hedges, and waste places; very abundant.

Perennial; flowering from June to August.

As a pasture grass, this is undoubtedly one of the best of our native grasses, very productive, and highly nutritious; but if allowed to grow rank and coarse, either from the want of more frequent cropping or mowing, it loses much of its nutritive matter; hence its greater value as a pasture grass than for hay: "yet even for this purpose," observes Mr. Sinclair, "it will be found more valuable than Rye-grass, *Lolium perenne*, and many other grasses. The produce does not increase if left standing after the time of flowering, but rather decreases in the weight of root leaves; and by reason of the rapid growth of the latter math, which succeeds an early cropping, the loss incurred by letting this hay crop stand for seed, will be found considerable." In the selection of grasses either for pasturage or mowing, the nature of the soil upon which they are to be sown must be duly considered. The loss in not attending to this important particular, is witnessed in the failure of the attempts to renew original pastures in rich meadow lands, by the neglect in selecting the seeds of those grasses suited to the soil and situation. It is true that Nature herself will, in the course of time, produce those kinds of grasses suited to the soil, and they only will remain permanent; but if, by the observance of her laws, we can assist her in the process, and accomplish that in a short time which would otherwise have required a long period, then knowledge and art will have advanced to their confines; for the laws of Nature, although they may be perverted, still remain unchanged. In illustration of these remarks, the *Dactylis glomerata* furnishes an excellent example. In a soil of a porous nature, its fibrous roots penetrate to a considerable depth, the plant flourishes well, producing a remarkable quantity of herbage, and remains permanent. If, on the contrary, it is sown in a situation where the surface of the soil is thin, upon a cold wet clay, it succeeds very imperfectly, or altogether fails: its produce at first may be abundant, but this is not permanent; its roots are small and short, the plants are easily pulled or trodden up by cattle, and from the same cause, should dry or hot weather occur, the produce will gradually diminish, and at length the plant will altogether disappear.

GENUS XLIII. CYNOSURUS. LINN. *Dog's-tail-grass*.

GEN. CHAR. *Panicle* spiked. *Spikelets* two or many-flowered, fixed upon pectinate bractæ. *Glumes* two, equal. *Glumelles* two,

nearly equal, lanceolate; the *outer* pointed or awned at the apex.—Name from *κύων*, a *dog*, and *οὐρα*, a *tail*; from the resemblance of the spike to a dog's tail.

1. *C. crista'tus*, Linn. (Fig. 187.) *crested Dog's-tail-grass*. Panicle spiked, linear; florets with a short awn or point.

English Botany, t. 316.—English Flora, vol. i. p. 137.—Lindley, Synopsis, p. 306.—Hooker, British Flora, vol. i. p. 48.—Sinclair, Hort. Gram. Woburn. p. 152.

Root of long, smooth fibres. *Plant* tufted. *Stem* erect, from one to two feet high, round, smooth, striated, slender, leafy below, naked above. *Leaves* narrow, with a long point, quite smooth, striated. *Sheaths* close, smooth, striated. *Ligula* short, obtuse, crenated or torn. *Inflorescence* an erect, close, linear, one-sided, spike-like panicle; the *spikelets* on short, simple, or subdivided branches, fixed alternately upon an angular, waved, smooth, or slightly hairy rachis, from three to five-flowered, each spikelet having at its base a compressed pectinated bractea, its divisions narrow, linear, acute, the margins pale and membranous, the keel rough. *Glumes* nearly equal, linear-lanceolate, pale and membranous, as long as the florets, the keel green and rough. *Glumelles* equal: the *outer* valve lanceolate-acute, roughish especially towards the apex, obscurely ribbed, the keel terminating in a short rough awn: *inner* valve membranous, with two strong, green, roughish lateral ribs, terminating in a short point, the apex bifid. *Stigmas* long and feathery. *Fruit* oblong, furrowed on one side. *Anther* yellow or purple.

Habitat.—Dry meadows and pastures; common everywhere.

Perennial; flowering in June and July.

This grass is no less useful than it is common. From its flowering stems being mostly refused by cattle, and left to stand withered and bleaching in the sun, it has been estimated as a grass of inferior value: this, however, is not found to be the case. The long fibrous roots with which it is furnished, produce a thick tuft of herbage, and support it in a green and succulent state during a long continuance of dry weather: hence it is a grass well suited for dry lands, and is found to flourish equally well in damp situations. Its foliage is short, and of rather slow growth,—circumstances which render it less fitted for purposes of making hay, or for the alternate husbandry; but for permanent pastures, especially for sheep, it is most admirably adapted.

2. *C. echina'tus*, Linn. (Fig. 188.) *rough Dog's-tail-grass*. Panicle spiked, ovate; florets with a long awn.

English Botany, t. 1330.—English Flora, vol. i. p. 138.—Lindley, Synopsis, p. 306.—Hooker, British Flora, vol. i. p. 48.—Sinclair, Hort. Gram. Woburn. p. 320.

Root with downy fibres. *Stem* erect, round, smooth, slender, leafy,

from one to two feet high. *Leaves* short, broad, tapering at the point, striated, rough, especially on the upper side. *Sheaths* striated, inflated in the upper part, roughish. *Ligula* large, lanceolate. *Inflorescence* a dense, ovate, spike-like panicle. *Spikelets* small, one or two-flowered, the bractea larger and more elegant than the last species, each valve with a long tapering point, more or less awned. *Glumes* equal, longer than the florets, lanceolate, with a long narrow point, membranous, the point roughish, as well as the keel. *Glumelles* equal, lanceolate: the outer obscurely ribbed, roughish towards the point, and terminating in a long, rough, slender awn; the inner membranous, bifid at the apex, with two lateral roughish ribs, terminating in a short point. *Stigmas* feathery. *Anther* rather large and pendulous.

Habitat.—Sandy ground towards the sea in the South of England, as near Hastings, Kent,—and Sussex; but principally in Jersey.

Annual; flowering in July.

The inflorescence of this genus is very remarkable in its structure: the bractea subtending each spikelet are composed of valves similar in arrangement to the perfect floret, and are supposed, with apparent justice, to be florets in an abortive state.

GENUS XLIV. ARUN'DO. LINN. *Reed*.

GEN. CHAR. *Panicle* loose. *Spikelets* many-flowered: the lower floret bearing stamens only, and naked; the upper perfect, and surrounded by a tuft of hairs. *Glumes* two, unequal, shorter than the florets. *Glumelles* two, unequal.—Name, *Arundo*, the Latin word for *Reed*, which is supposed to be derived from *ardeo*, because the plants soon become dry.

1. *A. phragmites*, Linn. (Fig. 189.) *common Reed*. *Panicle* spreading; florets about five; leaves lanceolate, with a long rigid point.

English Botany, t. 401.—English Flora, vol. i. p. 169.—Lindley, Synopsis, p. 310.—Hooker, British Flora, vol. i. p. 54.

Root with long, creeping, underground stems. *Stem* erect, from five to eight feet high, stout, hard, round, smooth, striated, and leafy. *Leaves* long, broad, lanceolate, with a very long, tapering, hard point, striated, smooth, and somewhat glaucous, the margins rough. *Sheaths* long, close, striated, somewhat rough. *Ligula* a tuft of short hairs. *Inflorescence* at first an erect, afterwards slightly drooping, spreading, ample panicle, its branches arising in alternate half whorls, the lower one surrounded with a tuft of pale, shining hairs; the branches long, angular, smooth, slender, and much subdivided. *Spikelets* linear. *Glumes* unequal, lanceolate, keeled and many-ribbed, brownish-purple. *Florets* about five, close, afterwards spreading, each elevated on a

short footstalk; the lower floret bearing stamens only, and naked; the upper with stamens and pistils, and the footstalks clothed with white and shining hairs, at first short, afterwards much elongated and spreading, giving the elegant waving panicle a beautiful silky appearance. *Glumelles* unequal, linear-lanceolate: the outer valve brownish-purple, with a keel and two lateral ribs, the margins membranous: the inner short, pale, thin, membranous, with two lateral roughish ribs, the apex bifid. *Stigmas* densely feathery. *Fruit* small, enclosed in the glumelles, but loose.

Habitat.—On the banks of lakes and rivers, the margins of pools and marshy situations; abundant.

Perennial; flowering in July.

This is the largest of our native grasses, growing abundantly on the banks of many rivers, where it is encouraged on account of its long, creeping, underground stems, which are of great use in confining the banks, and preventing their being so much washed away by the action of the running stream. The tough, hard stems are extensively used for thatching cottages, and for the ceilings and floors of dwellings, which are afterwards covered over with plaster, &c. It is used for making fences, and by artists to make reed-pens for sketching. In some parts of England, particularly on the eastern side, extensive tracts of this plant occur, which harbour many aquatic birds, and others which feed upon insects, and may be seen often in great numbers, actively engaged in their sportive movements. Some exotic species of *Arundo* have a great tendency to become arborescent. The *A. donax*, a native of the South of Europe, has much stronger and stouter stems than our species, and is used for vine-poles, fishing-rods, &c.; for the latter and other purposes, they are exported from Spain and Portugal into this country in considerable quantities. The Reed has from time immemorial been regarded as the pastoral instrument of music:

“Arcadian pipe, the pastoral reed

Of Hermes.”

MILTON.

Pan, the god of shepherds, is said in mythological history to have been enamoured of the beautiful Syrx, and to have pursued her one day to the borders of the river Ladon, in Arcadia. The nymph implored the help of the river, which received her into its waters, and metamorphosed her into Reeds. Pan, in the bitterness of his disappointment, is recorded to have cut several of these Reeds of different sizes, and formed of them the first shepherd's pipe. Hence has arisen the name of *Pandean* pipe.

GENUS XLV. ELYMUS. LINN. *Lyme-grass*.

GEN. CHAR. *Inflorescence* spiked. *Spikelets* two or three from the same point, two or three-flowered. *Glumes* two, both on one side



187.

Cynosurus cristatus.



188.

Cynosurus echinatus.



189.

Arundo phragmites.



190.

Elymus arenarius.



191

Elymus geniculatus.



of the spikelet. *Glumelles* two, nearly equal.—Name, “*ελυμος*, given by the Greeks to the *Panic-grasses*, perhaps because they grew abundantly about Elyma, in Greece. *Theis*.”—(*Hook.*)

1. *E. arena'rius*, Linn. (Fig. 190.) *upright Sea Lyme-grass*. Spike erect, close; spikelets in pairs; florets as long as the lanceolate glumes.

English Botany, t. 1672.—English Flora, vol. i. p. 177.—Lindley, Synopsis, p. 296.—Hooker, British Flora, vol. i. p. 55.—Sinclair, Hort Gram. Woburn. p. 368.

Root with numerous long, tough, creeping *underground stems*. *Stem* from three to four feet high, round, smooth, striated, leafy, stout. *Leaves* long, the margins rolled inwards, the point acute, hard, smooth, glaucous, the upper side with numerous strong stria, the under quite smooth. *Sheaths* long, close, smooth, striated. *Ligula* very short, obtuse. *Inflorescence* an erect, close spike, from four to twelve inches long, pale glaucous-green, the rachis notched and waved. *Spikelets* about three-flowered, two, sometimes three, from the same point. *Glumes* lanceolate, with a largish sharp point, keeled, and more or less distinctly ribbed, smooth or slightly downy. *Florets* elevated on short downy footstalks. *Glumelles* equal, lanceolate, downy: the *outer* valve keeled, and with four lateral ribs; the *inner* thin, membranous, with two lateral ribs and a slightly bifid apex. *Glumellules* lanceolate, downy, and ciliated. *Stigmas* feathery. *Fruit* linear, the apex hairy, furrowed on one side.

Habitat.—Sandy sea-shores; frequent.

Perennial; flowering (but rarely) in July.

Neither this nor the following species are grasses of any agricultural utility, although they contain a large proportion of nutritive matter, remarkable for the quantity of saccharine substance which it contains. They are, nevertheless, grasses of considerable importance in preventing the encroachments of the sea, especially the *E. arenaria*, which is frequently found growing in company with *Ammophila arenaria* and *Carex arenaria*, all of which have long, tough, creeping underground stems, with numerous fibrous downy roots interweaving themselves together, and forming a kind of network, which, together with their stout tufted stems and wide-spreading leaves, form a natural barrier admirably adapted by Nature to prevent the encroachment of the loose and flowing sands, which would otherwise advance, and convert many of the now fertile meadows or the luxuriant plains into deserts of moving sand. Much land has been lost at various periods by the encroachment of the sea, as well as by the inundation of sand, owing to these natural protections having been destroyed by reckless people. Of so much importance have these grasses been esteemed, even so far back as the reign of William III., as to induce the Scottish Parliament of that period to render its destruction penal; and these provisions

were extended to the coast of England by the British Parliament in the reign of George II. Vast tracts of fertile country in Egypt have, by means of these drifting sands, been converted into barren deserts. The Dutch owe to the protecting power of these grasses the existence of considerable tracts of their country; and the sand-hills on various parts of the French coast, are covered and kept firm by these mat-grasses. Spurnhead, on our own coast, is a projecting sand-bank at the mouth of the river Humber, firmly fixed by roots of the mat-grasses, and receives the full force of the swelling sea, breaking its power before reaching the town of Hull, which is so situated that it is supposed, unless it was thus protected, it would ere now have been destroyed, and its site have formed part of the sea.

2. *E. geniculatus*, Curtis, (Fig. 191.) *pendulous Sea Lyme-grass*.

Spike lax, becoming bent downwards with an angle; spikelets in pairs; florets shorter than the subulate glumes.

English Botany, t. 1586.—English Flora, vol. i. p. 178.—Lindley, Synopsis, p. 296.—Hooker, British Flora, vol. i. p. 55.—Sinclair, Hort-Gram. Woburn. p. 370.

Root with numerous downy fibres and slightly creeping *underground stems*. *Stem* from two to three feet high, round, smooth, striated, and, like the rest of the plant, a pale glaucous-green. *Leaves* long, the upper side with numerous strong, close, roughish stria, the under smooth, the margins rolled inwards, the point hard, acute. *Sheaths* long, close, smooth, striated. *Ligula* very short, obtuse, crenated. *Inflorescence* a long spike, at first erect, becoming when in flower bent downwards at an acute angle, a remarkable circumstance characteristic of the species. *Spikelets* two together, at the rather distant notches of the zigzag rachis. *Glumes* equal, smooth, and shining, awl-shaped, longer than the florets, keeled and obscurely ribbed. *Florets* three or four. *Glumelles* equal: the *outer* valve ribbed, and thickly clothed with short soft down; *inner* thin, with two marginal ciliated ribs, the apex bifid. *Glumellules* ovate, lanceolate, ciliated. *Stigmas* long, feathery. *Fruit* linear, furrowed, the apex hairy.

Habitat.—Near Gravesend, in a salt marsh; very rare.

Perennial; flowering in July.

GENUS XLVI. HORDEUM. LINN. *Barley*.

GEN. CHAR. *Inflorescence* spiked. *Spikelets* single-flowered, three together, the lateral ones mostly imperfect. *Glumes* two, lateral. *Glumelles* two, the outer valve awned. *Fruit* closely invested with the glumelles.—Name of doubtful origin: it is said to be derived from *hordus*, *heavy*; on account of the heavy and inelastic bread made with its flour.

1. *H. sylvaticum*, Hudson, (Fig. 192.) *Wood Barley-grass*. Spike erect, compact; florets two or three, mostly perfect; glumes linear-lanceolate, awned, roughish.

Hudson, *Flora Anglica*, p. 57.—*Elymus Europaëus*, Linn. *English Botany*, t. 1317.—*English Flora*, vol. i. p. 178.—Lindley, *Synopsis*, p. 296.—Hooker, *British Flora*, vol. i. p. 55.

Root of numerous strong fibres, tufted. *Stems* numerous from the same root, erect except at the base, from two to three feet high, round, striated, roughish, leafy, especially below. *Leaves* broad, linear-lanceolate, rough, with a mid-rib, and numerous striated. *Sheaths* rather short, close, striated, roughish, and more or less clothed with deflexed hairs. *Ligula* very short, obtuse, mostly crenated. *Inflorescence* an erect, close, imbricated spike, from two to three inches long; its rachis angular, rough, waved and notched. *Spikelets* three together, from each notch of the rachis, elevated on short roughish footstalks, each spikelet mostly containing a single, sometimes but rarely two florets, all mostly perfect. *Glumes* two, on the outer side of the floret, linear-lanceolate, ribbed, smooth at the base, rough towards the point, and terminating in a roughish awn. *Glumelles* lanceolate, equal: the outer concave, mostly smooth and shining in the lower part, roughish and ribbed towards the point, and terminating in a long, rough awn; the inner flat, smoothish, with two strong, roughish, lateral ribs; the apex slightly bifid, and at its base a rough, strong awn, about half its length; an abortive floret, which sometimes becomes developed. *Glumellules* acute, the margins ciliated. *Stigmas* short, feathery. *Fruit* downy at the apex, furrowed on one side, and closely invested with the glumelles.

Habitat.—Woods and thickets in a chalky or calcareous soil; not uncommon in the midland counties of England, but unknown to Scotland or Ireland.

Perennial; flowering in June and July.

This grass, united by many botanists with *Elymus*, I have, after Hudson, Knapp, and others, placed among the *Hordeums*, not, however, without a minute and careful examination of numerous specimens collected in various situations; and upon comparing these with the various species of *Hordeum*, not only in their habit but structure, I cannot but agree with the above authors, in thinking this a much more natural arrangement. It is true that the florets are mostly perfect, and that sometimes there are two in one spikelet; this, however, is not more than occurs among the *Hordeums*; and at the base of the inner valve of this, as in all our British species of *Hordeum*, there is an abortive or undeveloped floret, reduced in most instances to a simple awn.

2. *H. mu'rinum*, Linn. (Fig. 193.) *Wall Barley*. Spike erect; glumes of the intermediate floret linear-lanceolate, ciliated; those of the lateral florets bristle-shaped.

English Botany, t. 1971.—English Flora, vol. i. p. 179.—Lindley, Synopsis, p. 296.—Hooker, British Flora, vol. i. p. 55.—Sinclair, Hort. Gram. Woburn. p. 268.

Root fibrous and downy. *Stem* bent in the lower part, erect in the upper, from twelve to eighteen inches high, leafy, round, smooth, and striated, slender. *Leaves* flat, spreading, narrow, linear, rough, sometimes hairy. *Sheaths* rather long, loose, striated, smooth. *Ligula* short, obtuse. *Inflorescence* a close round spike, from two to three inches long. *Spikelets* three together, elevated on a short, flat, ciliated stalk; each spikelet single-flowered; the two lateral ones mostly imperfect, on short hairy footstalks, the central one nearly sessile and perfect. *Glumes* of the two lateral florets bristle-shaped, rough, sometimes ciliated; those of the centre linear-lanceolate, rough, ribbed, terminating in a rough awn, the margins ciliated. *Glumelles* lanceolate, equal: the *outer* concave, smooth and shining, except roughish towards the point, obscurely three-ribbed, and terminating in a long, rough awn: the *inner* flat, somewhat downy, with two strong lateral ribs, and at its base on the inner side is a strong, roughish bristle. *Stigmas* feathery; apex of the *fruit* downy, furrowed on one side.

Habitat.—Walls and road-sides; common in England; about Edinburgh, "and at Elgin, its most northerly range," in Scotland; and Dublin, in Ireland.

Annual; flowering from June to August.

The Wall or Mouse Barley is one of the most inferior grasses, apparently refused by all cattle.

3. *H. pratense*, Hudson, (Fig. 194.) *Meadow Barley*. *Glumes* all bristle-shaped and rough.

English Botany, t. 409.—English Flora, vol. i. p. 180.—Lindley, Synopsis, p. 296.—Hooker, British Flora, vol. i. p. 55.—Sinclair, Hort. Gram. Woburn. p. 315.

Root fibrous, "becoming bulbous in barren ground, occasionally overflowed." *Stem* erect, from one and a half to two feet high, smooth, round, scarcely striated, slender, leafy. *Leaves* rather short, narrow, linear, roughish, especially on the upper side, and sometimes hairy. *Sheaths* close, striated, smooth, except the lower ones, which are more or less thickly clothed with deflexed hairs. *Ligula* short, torn. *Inflorescence* an erect, close spike, from one to two inches long. *Spikelets* three together, elevated on a short, flat, ciliated stalk; each spikelet single-flowered; the lateral ones imperfect, small, scarcely awned, sometimes only a simple, awn-like valve, elevated on short, roughish footstalks; the central floret sessile and perfect. *Glumes* all bristle-shaped and rough. *Glumelles* equal, lanceolate: the *outer* smooth, obscurely ribbed; the apex of the perfect floret terminating in a long, rough awn, the inside of the valve more or less clothed with hairs: the



192.

Hordeum sylvaticum.



193

Hordeum murinum



194.

Hordeum pratense.



195.

Hordeum maritimum.



196.

Triticum caninum.



197

Triticum repens.

inner valve smooth, with two lateral roughish ribs. *Stigmas* loosely feathery.

Habitat.—Fields and meadows; not unfrequent in England and Ireland; Salisbury Craigs, near Edinburgh, Scotland.

Annual; flowering in June and July.

This grass, though found to form a part of many pastures, does not possess those qualities by which it can be recommended to the notice of the agriculturist, although it is said to form the principal part of the herbage of some pastures in Norfolk, that are esteemed for the superior kind of sheep that feed upon it.

4. *H. maritimum*, Withering, (Fig. 195.) *Sea-side Barley*. Glumes smoothish, the interior one of the lateral florets semi-lanceolate, the rest bristle-shaped.

English Botany, t. 1205.—English Flora, vol. i. p. 181.—Lindley, Synopsis, p. 296.—Hooker, British Flora, vol. i. p. 55.

Root fibrous, tufted. *Stem* bent at the base, erect above, about a foot high, smooth, striated, leafy, and, as well as the whole plant, of a pale glaucous-green. *Leaves* numerous at the base, narrow, linear, smooth, or slightly hairy. *Sheaths* loose, the upper one inflated, striated, smooth. *Ligula* very short, obtuse, crenated. *Inflorescence* similar to *H. murinum*, to which this plant is nearest allied. *Glumes* smoothish, all bristle-shaped except the inner one of the lateral florets, which are dilated on one side towards the base into half lance-shaped. *Glumelles* equal, smooth: the *outer* scarcely ribbed, and terminating in a long roughish awn, those of the lateral florets with short awns; *inner* valve with two lateral ribs, and from its base arises a smooth bristle.

Habitat.—Dry pastures and sandy ground near the sea. Not uncommon in England. In Angusshire, Scotland. Between Swords and Rush, Ireland?

Annual; flowering in June and July.

This plant, like *H. murinum*, is injurious to pastures and hay-fields, on account of the brittleness of the spikes, and the roughness of the glumes, which hurt the mouths of cattle so much, that in the Isle of Thanet, where it is very common, it is said to be one of the best recommendations of an inn to have hay without *squirrel tails*, or *beard grass*, amongst it.

The common cultivated Barley, *H. distichon*, is a well-known cereal grass of considerable importance, though not so much as an article of food with us at the present time as it was formerly. By the Romans it was cultivated as food for their horses, and also ground down and made into bread for themselves; and it was considered so superior in its nutritious properties, as to be regularly supplied to the army. It was also the food of gladiators when training: hence, it is said, they

were called *Hordearii*. Barley in this country, and indeed in all the temperate parts of Europe, (see page 71,) is chiefly cultivated for the food of cattle, and for forming malt liquors and ardent spirits. During the process of malting, the albumen and mucilaginous substances which the seeds contain are changed into saccharine matter, which is afterwards by fermentation converted into spirit. Pearl, Scotch, or French Barley is formed by depriving the seeds of their coverings in mills; and various preparations are made from it, especially the decoction, which is used as a drink, and is an article of considerable utility in inflammatory affections of the chest, &c. Amongst the ancients, decoctions of Barley were the principal medicines, as well as aliments, in acute diseases.

GENUS XLVII. TRITICUM. LINN. *Wheat, or Wheat-grass.*

GEN. CHAR. *Inflorescence* spiked. *Spikelets* many-flowered, all fertile. *Glumes* two, nearly equal, placed transversely, the sides (not the back of one of them) directed to the rachis. *Glumelles* two, lanceolate; the *external* one mostly awned at the apex.—Name *Triticum*, “quod tritum est e spicis,” because it is thrashed or beaten from the spikes, or, according to Varre, from the mechanical process of grinding to which the seeds are subjected before being used as food.

* *Spikelets distichous (in two opposite rows).*

1. *T. caninum*, Hudson, (Fig. 196.) *fibrous-rooted Wheat-grass.* Glumes acute, or slightly awned, from three to five-ribbed; florets about four; awn long, slender; leaves flat; root simple, fibrous.

English Botany, t. 1372.—English Flora, vol. i. p. 184.—Hooker, British Flora, vol. i. p. 56.—Sinclair, Hort. Gram. Woburn. p. 202.—*Agropyrum caninum*, Beauv. Lindley, Synopsis, p. 298.

Root fibrous, simple, or downy. *Stem* erect, from two to three feet high, round, smooth, finely striated, slender, and leafy. *Leaves* flat, linear-lanceolate, with a tapering point, rough, sometimes hairy. *Sheaths* close, striated, smooth, the lower ones sometimes hairy. *Ligula* very short, scarcely observable. *Inflorescence* an erect, often rather loose spike; the angles of the zigzag rachis hairy. *Spikelets* alternate, except the lower ones, which are sometimes in pairs, and rather distant. *Glumes* somewhat unequal, lanceolate, acute or slightly awned, with three or five strong roughish ribs. *Florets* from three to five. *Glumelles* equal, lanceolate, smooth: the *outer* concave, scarcely ribbed except towards the point, which terminates in a long, slender, roughish awn; *inner* flat, with two lateral downy ribs. *Stigmas* small. *Fruit* oblong, furrowed on one side.

Habitat.—Woods, banks, and hedges; frequent.

Perennial; flowering in July.

For agricultural purposes, this grass might be cultivated with advantage for pasturage in a light soil. It produces an abundant and early nutritious herbage, but very little in the latter part of the season; this, however, is the same, with very few exceptions, with all the grasses that produce their foliage early in the spring. It is nearly allied to the following species, and in some instances is only to be distinguished by its fibrous root.

2. *T. re'pens*, Linn. (Fig. 197.) *creeping Wheat-grass, or Couch-grass*.

Glumes lanceolate, awned, many-ribbed; florets from four to eight, pointed or awned; leaves flat; root with creeping underground stems.

English Botany, t. 909.—English Flora, vol. i. p. 183.—Hooker, British Flora, vol. i. p. 56.—Sinclair, Hort. Gram. Woburn, p. 402.—*Agropyrum re'pens*, Beauv. Lindley, Synopsis, p. 298.

Roots with numerous creeping, branched, *underground stems*, the joints having membranous sheaths. *Stem* erect, smooth, striated and leafy, round, slender, from two to three feet high. *Leaves* flat, linear, lanceolate, striated, spreading, smooth at the base, rough towards the point, especially on the upper surface, which is also sometimes hairy, of a pale somewhat glaucous-green. *Sheaths* long, close, smooth, striated. *Ligula* very short, crenated. *Inflorescence* an erect spike, from three to four inches long; the angles of the zigzag rachis slightly hairy or serrated. *Spikelets* alternate, distant or crowded. *Glumes* lanceolate, with a long point or awn of variable length, roughish, keeled, and from four to eight-ribbed. *Florets* from four to eight each, on a short, round, smooth footstalk, at first close, spreading when in flower. *Glumelles* equal: the *outer* smooth, lanceolate, with from four to eight more or less distinct ribs; the keel roughish, terminating in an acute point, or a rough *awn*, of variable length; *inner* valve thin, membranous, obtuse, with two lateral rough ribs. *Stigmas* long, feathery. *Anthers* yellow. *Fruit* furrowed on one side.

Habitat.—Fields and waste places; very common.

Perennial; flowering during the summer months.

This grass, on account of its long underground stems, which grow and spread very rapidly, is a most troublesome weed in gardens and cultivated lands, especially of a light soil. It readily breaks off at its numerous joints, from every one of which it is capable of putting out roots and stems, which render it difficult of extirpation. These underground stems of the Couch-grass contain a large proportion of nutritive matter, much more than in either the flowering stems or leaves; and on the Continent they are collected and esteemed as food for horses and other cattle; indeed it has been stated, on the authority of a

French veterinary surgeon, that exhausted and worn-out horses are very speedily restored to strength and condition by giving them, daily, one or two bundles of Couch-grass, of ten or twelve pounds each, mixed with carrots. The expressed juice of these stems was recommended by some of the ancient physicians to be taken liberally as a drink in obstructions of the bowels, &c. The leaves, which Sinclair says contain an excess of bitter extractive and saline matter, are eaten by dogs to excite vomiting.

3. *T. jun'ceum*, Linn. (Fig. 198.) *rushy Sea Wheat-grass*. Glumes obtuse, many-ribbed; florets four or five, awnless; leaves with the margins rolled inwards; root with creeping underground stems.

English Botany, t. 814.—English Flora, vol. i. p. 182.—Hooker, British Flora, vol. i. p. 56.—*Agropyrum jun'ceum*, Beauv. Lindley, Synopsis, p. 298.

Root with downy fibres, and numerous long, creeping *underground stems*. Whole plant a pale glaucous-green, rigid. *Stem* bent at the base, and sometimes purplish, erect above, from one to three feet high, round, quite smooth, finely striated, leafy. *Leaves* linear, with a long narrow point, the under side quite smooth, the upper with numerous prominent rough striæ, the margins rolled inwards. *Sheaths* close, quite smooth, finely striated. *Ligula* very short, obtuse, crenated. *Inflorescence* an erect spike, from two to four or five inches long. *Spikelets* compressed, distant or crowded. *Glumes* oblong, nearly equal, with three obtuse teeth at the extremity, quite smooth, many-ribbed, and containing from three to six awnless *florets*. *Glumelles* nearly equal: the *outer* quite smooth, keeled, and with four more or less distinct lateral ribs; the apex with three obtuse teeth, most distinct in the upper florets; *inner* valve obtuse, with two lateral roughish ribs. *Glumellules* lanceolate, ciliated. *Stigmas* feathery. *Fruit* downy at the apex, furrowed on one side.

Habitat.—Sandy banks on the sea-shore; frequent.

Perennial; flowering in July.

The long, tough, creeping, underground stems of this grass are useful, like *Elymus arenarius*, &c., in binding the loose sands of the sea-shores, and are much sought after by pigs, who eat them with an apparent relish.

4. *T. crista'tum*, Schreb. (Fig. 199.) *crested Wheat-grass*. Glumes awl-shaped, with a prominent keel, terminating in a rough awn, obscurely ribbed; florets about four, awned; spikelets much crowded.

English Botany, t. 2267.—English Flora, vol. i. p. 184.—Hooker, British Flora, vol. i. p. 56.—Sinclair, Hort. Gram. Woburn. p. 316.—*Agropyrum crista'tum*, Beauv. Lindley, Synopsis, p. 298.

Root of strong woolly fibres. *Stem* bent at the base, becoming erect,



198.

Triticum junceum.



199.

Triticum cristatum.



200.

Triticum loliaceum.



201.

Brachypodium sylvaticum.



202.

Brachypodium pinnatum.



203.

Lolium perenne.

round, striated, roughish, especially in the upper part, slender, leafy, from twelve to eighteen inches high. *Leaves* flat, linear, tapering at the point, numerous, striated, smooth on the under side, hairy on the upper. *Sheaths* close, striated, smooth. *Ligula* very short, scarcely observable. *Inflorescence* an erect, crowded, compressed spike, about an inch long. *Spikelets* compressed, crowded, two-ranked. *Glumes* nearly equal, awl-shaped, with a keel terminating in a rough awn about as long again; one side of the valve with a single rib; the other side narrower and the rib obsolete. *Florets* from three to six, compressed, smooth or hairy. *Glumelles* nearly equal, lanceolate: the *outer* obscurely four-ribbed, with a keel terminating in a roughish awn; the *inner* valve bifid at the apex, with two lateral roughish ribs. *Glumellules* small, lanceolate. *Stigmas* loose, feathery. *Fruit* downy at the apex.

Habitat.—"Sea-side between Arbroath and Montrose—Mr. G. Don; where, however, I should fear it cannot be considered wild. It is a native of the south-eastern parts of Europe."—Hook.

Perennial; flowering in July.

** *Spikelets turned to one side.*

5. *T. lolia'ceum*, Sm. (Fig. 200.) *dwarf Sea Wheat-grass*. *Glumes* obtuse; *florets* numerous, awnless, indistinctly ribbed; *stems* rigid, branched; *root* fibrous.

English Botany, t. 221.—English Flora, vol. i. p. 185.—Hooker, British Flora, vol. i. p. 56.—*Catopodium lolia'ceum*, Link. Lindley, Synopsis, p. 297.

Root of numerous long, branching, downy fibres. *Stem* erect, remarkably stiff and wiry, branching from the base, and erect, or bent; from two to four inches high, smooth, shining, finely striated, leafy. *Leaves* linear, striated, flat, smooth, or roughish on the back. *Sheaths* close, smooth, striated. *Ligula* short, obtuse, torn. *Inflorescence* an erect, one-sided spike; the rachis flat, waved, and striated. *Spikelets* ovate, flat, alternate, distant or crowded, sessile, or elevated on a short stalk, smooth. *Glumes* unequal, ovate, obtuse, with a membranous margin, keeled, and with two or four more or less distinct ribs. *Florets* numerous, imbricated. *Glumelles* two, nearly equal: the *outer* ovate, acute, smooth, keeled, two or four-ribbed, the margin pale and membranous; the *inner* lanceolate, with two lateral downy ribs. *Stigmas* feathery.

Habitat.—On the sandy sea-shores of Norfolk, Suffolk, and Essex. North Wales and Isle of Man—Mr. Wilson. East coast of Scotland, not uncommon. Sandymount, Howth, &c., and on the northern and southern coasts of Ireland.

Annual; flowering in June and July.

This plant has much the habit and appearance of *Poa rigida*.

The genus as it here stands is considered by some authors as distinct from the exotic species which are so extensively cultivated as *bread-corn*, rather than a mere division or group of the genus. One division (to which all our native species belong) are small perennial or annual plants, useful only as pastoral grasses, to which, except *T. loliaceum*, they have given the name of *Agropyrum*. The other division, to which they have retained the name of *Triticum*, is the cereal or corn-grasses, of which there are several species cultivated in the temperate regions of the globe (see page 71) as bread-corn.

The native country of Wheat and other cereal grasses is uncertain. Wheat varies considerably in its quality, and the quantity which it produces, according to the climate and soil in which it is grown. Sicilian Wheat, of which there are two kinds, the thin and thick skinned, according to the experiments of Sir H. Davy, contains more nutritive matter than any grown in Britain; and Wheat grown in the county of Middlesex is more nutritious than that grown in the northern counties. The flour obtained from the grain of Wheat by grinding it between stones, is superior to any other for making into bread, owing to the large quantity of gluten that it contains, which is in combination with starch. These two (its principal constituents) are readily separated by washing the flour or bruised grain with water, by which means the starch is carried away with the water, and, if allowed to stand, settles to the bottom: pressed in cloths, and gradually dried, it forms white columnar masses—the starch of the shops. Starch is also obtained in considerable quantities from potatoes, and this is superior to the wheaten starch for domestic purposes. It also forms the greater part of the nutritive matter of the different farinaceous substances which are so much used during the time of sickness—such as *sago*, which is produced from several species of Palm, in many of the East Indian islands. *Salep* is prepared from the roots of several species of Orchis, as the *mascula*, *morio*, and *pyramidalis*. *Tapioca*, a well-known nutritive substance, the *cassava* of the West Indies, and called by the negroes *manioc* or *magnioc*, is prepared from the root of the *Jatropha manihot*, which yields upon pressure a highly poisonous juice, used by the savages to envenom their spears, arrows, and darts; and a draught of the juice is the means by which the life of the condemned slaves is taken away. This highly poisonous principle, however, is dissipated by drying, or washing the pulp of the root with water, and immediately by heat; what remains is chiefly starch, which is passed through a kind of sieve and dried, and is highly nutritive.

Gluten, the substance which remains after washing away the starch from the flour, is prepared in considerable quantities in Italy, both for home consumption and for exportation, and is obtained in the shops under the names of macaroni, vermicelli, &c. This forms the ordinary food in many parts of Italy, where it is sold by the yard.

Wheat, Oats, Barley, &c. are liable to the attacks of several kinds of

Fungi, known by the names of *blight*, *mildew*, *bunt*, &c., which produce great injury, not only in diminishing the quantity, but also in deteriorating the quality, of the produce. *Uredo Caries*, known to the farmer by the names of *canker-brand*, *balls*, *bladder* or *pepper-brand*, *stinking brand*, and *bunt*, is distinguished by the intolerable stench which it gives out when crushed. It has been found hitherto to attack only the ears of Wheat, and is the most injurious of this tribe of parasitical fungi. It carries on its destructive operations secretly, and often completes its work without creating in the mind of the owner any suspicion of its presence; for there are no external changes effected in the grain, with the exception of making them a little rounder, so that a botanical eye is necessary to its detection. When the ears are thrashed or bruised, however, the ravages which these secret plunderers have made will be apparent, not only by their fetid smell, but the whole farina of the grain will be found to be destroyed, and its place occupied by a dense blackish-brown mass, composed of an immense number of minute globular fungi: so minute are these plants, that it is computed by Bauer that "no less than two millions five hundred and sixty thousand individual fungi would be required to cover one square inch."

U. segetum, the *smut* or *dust-brand*, attacks indiscriminately the ears of corn and various grasses, doing great injury to the crops, like the former species, by destroying the fruit. Fig. 215. represents an ear of Barley affected by *U. segetum*, with a section of one of the grains in a young state. This species is readily distinguished from the last by its want of smell, its bursting through and destroying the glumes, and the smaller size of the fungi, for Mr. Bauer states that "no less than seven millions eight hundred and forty thousand would be required to cover the same space" as *U. Caries*. Each of the fungi appears, when highly magnified, to consist of an external membrane or tunic of a reticular texture, and containing within it a vast number of sporules,—according to the calculation of Fries, upwards of ten millions,—and each of these sporules or seeds are capable of reproducing the plant—a division so infinite in living organised matter, as cannot but create in our minds feelings of wonder and astonishment at the means adapted by the Great Author of Universal Nature to accomplish his purposes.

Many laborious experiments and researches have been made by the late Sir Joseph Banks, Mr. Bauer, M. Fee, and others, to elucidate the history of these extraordinary parasitical plants, from which it appears that the reproductive contents of the fungi are absorbed by the roots of the growing grasses, together with the water and other matter from the soil in which they are grown, and conveyed through the sap-vessels into various parts of the plant. Such being the case, the judicious cultivator will guard against the evil by an appropriate rotation of crops, a careful choice of seed, and by the use of those means, both as manure to the land and "dressing" for the seed, which have been found to destroy the sporidia: for this purpose, lime and its solutions

appear to be very useful.† But their growth depends upon so many accidental circumstances, that even by the most judicious management, and careful treatment, their appearance will not be altogether prevented.

GENUS XLVIII. BRACHYPO'DIUM. BEAUV. *False Brome-grass.*

GEN. CHAR. *Inflorescence* somewhat racemose. *Spikelets* alternate, somewhat compressed, many-flowered, footstalks short. *Glumes* unequal, transverse. *Glumelles* two, the outer valve mostly awned at the extremity.—Name from *βραχυς*, *short*, and *πους*, *ποδος*, *a foot*; in reference to the short footstalks of the spikelets.

† The following experiments in the preparation of Wheat for seed from a *smutty sample* were made on the 15th of October, 1835, in the middle of an eight acre field, a clover layer. The results have been communicated to the *Essex Herald* by Mr. Smyth Lungley, of Church Hall, Kelvedon; and we have no doubt the information thus conveyed will be acceptable to our agricultural readers:—

No. 1.—Washed three times in clean water, and skimmed every time; then dipped in wood-ashes lees with 2lbs. of arsenic boiled in 20 gallons of the liquor, after which, the Wheat well limed and sown. No bladder or smutty ears.

No. 2.—Not washed; steeped in the liquor and skimmed, and well limed. About 1500 bladdered or smutty ears to the acre.

No. 3.—Not washed; wetted with lees and no arsenic, but *salted* instead, and limed. About 2250 smutty ears to the acre.

No. 4.—Washed as the first, in three clean waters; no arsenic, no salt, but dipped in the lees, and well limed. About 2250 smutty ears to the acre, the same as No. 3.

No. 5.—Steeped in lees only for about four hours, and limed; not washed, nor any arsenic or salt. About 4500 smutty ears to the acre.

No. 6.—Sown *perfectly* dry. About 11,500 smutty ears to the acre.

No. 7.—The seed Wheat rubbed well in the hands with a quantity of bladders or smut balls, of course not washed, but dipped in the lees and arsenic, and well limed. About 18,750 smutty ears to the acre.

No. 1		0	 smutty ears.
2		1,500	 ditto.
3		2,250	 ditto.
4		2,250	 ditto.
5		4,500	 ditto.
6		11,500	 ditto.
7		18,750	 ditto.

280 average ears of Wheat thrashed is a pint measure.

No. 1.—No loss or waste or damage by smut.

2.—5½ pints loss per acre, and Wheat injured.

3.—11 ditto..... ditto.

4.—11 ditto..... ditto.

5.—22 ditto..... ditto.

6.—36 ditto..... ditto.

7.—67 ditto loss to the acre, or about one bushel, and the Wheat much injured.

In the field where the experiment was tried, there were 750 sheaves to the acre, on the average. The smutty ears were gleaned from several sheaves, which in No. 7 averaged about 25 smutty ears to the sheaf, which makes the above quantity. The other sheaves were gleaned accordingly.

It is not the loss of smutty Wheat altogether (which amounts to a bushel in No. 7), but the damage done to the Wheat that goes to market. When good Wheat is worth £12 10s. per load, if Wheat is much smutty it will lessen the value 50s a load.

In some fields this year, from 50 to 100 smutty ears may be gleaned out of one sheaf; that is, from to four bushels per acre waste.

1. *B. sylvaticum*, Beauv. (Fig. 201.) *slender False Brome-grass*.
Spike drooping; spikelets mostly turned to one side, hairy; awn slender, longer than the florets.

Lindley, Synopsis, p. 297.—Hooker, British Flora, vol. i. p. 57.—*Bro'mus sylvaticus*, English Botany, t. 729.—*Festu'ca sylvatica*, English Flora, vol. i. p. 149.—Hort. Gram. Woburn. p. 374.

Root fibrous. *Plant* tufted. *Stem* erect, from one to three feet high, round, smooth and shining, slender, leafy, more or less hairy, particularly about the joints. *Leaves* broadly linear, flat and spreading, with a strong midrib and several slender lateral ones, rough, and hairy, of a dark bright green. *Sheaths* short, close, striated, somewhat keeled, smooth and hairy. *Ligula* obtuse, torn, and hairy. *Inflorescence* a drooping, somewhat racemose spike. *Spikelets* nearly cylindrical, alternate, and placed transversely with the waved rachis, elevated on short downy footstalks. *Glumes* unequal, lanceolate, numerous, striated, more or less hairy, and a narrow membranous margin. *Florets* numerous. *Glumelles* unequal: *outer* lanceolate, the keel terminating in a slender, rough awn, longer than the floret, having about six lateral ribs, rough, sometimes hairy; *inner* valve obtuse, roughish, and with two lateral ciliated ribs. *Stigmas* short, feathery. *Fruit* loose, furrowed.

Habitat.—In dry woods and hedges. Not uncommon in England, Scotland, and Ireland.

Perennial; flowering in July.

2. *B. pinna'tum*, Beauv. (Fig. 202.) *Heath False Brome-grass*.
Spike erect; spikelets two-ranked; awn slender, shorter than the floret.

Lindley, Synopsis, p. 297.—Hooker, British Flora, vol. i. p. 57.—*Bro'mus pinna'tus*, Linn. English Botany, t. 730.—*Festu'ca pinna'ta*, English Flora, vol. i. p. 150.—Hort. Gram. Woburn. p. 375.

Root fibrous. *Stem* erect, round, smooth, hard, shining, leafy, from one to three feet high. *Leaves* narrow, linear, long, more or less rigid by the inflexed margins, smooth, or more or less hairy. *Sheaths* long, close, striated, smooth, or rough with deflexed hairs, especially the lower ones. *Inflorescence* an erect, somewhat racemose spike. *Spikelets* linear, numerous, flowered, each elevated on a short, sometimes rather long, angular, downy footstalk, attached to the notched, angular, waved, roughish rachis; sometimes there are two inserted at a notch, and the footstalk of the lower spikelet, occasionally the two or three lower ones, have a pale, cartilaginous, lanceolate bractea. *Glumes* unequal, lanceolate, ribbed, and, as well as the florets, quite smooth or downy. *Glumelles* unequal: the *outer* lanceolate, acute; with a rough *awn*, slender and shorter than itself, or scarcely any; *inner* valve obtuse or notched, with two lateral ciliated ribs. *Stigmas* feathery. *Fruit* furrowed, loose.

Habitat.—Open fields and heathy places. Oxfordshire and Kent. Roche Abbey and other places, Yorkshire. Near North Queensferry, Scotland. Doubtful if found in Ireland.

Perennial; flowering in July.

This plant, which we find plentiful in the open fields about Roche Abbey, is quite smooth, or thickly clothed with short rigid hairs, especially the spikelets and lower sheaths, and the whole plant is of a pale yellow hue. This species, together with the above, according to Sinclair, may be considered the least useful of the British grasses.

GENUS XLIX. LO'LIIUM. LINN. *Darnel*.

GEN. CHAR. *Inflorescence* a two-sided spike. *Spikelets* alternate, compressed, many-flowered. *Gluma* a single valve. *Glumelles* two, nearly equal; the outer valve awnless, or with an awn below the apex.—The derivation of the name is variously given by authors. According to Thornton, it is from *λαιον*, *corn*, and *ολοος*, *injury*. Hooker gives the following:—"Quasi *dolium*, *δολιον*, quod dolosum sit vel adulterimum. Fit enim e corruptis Triticici ac Hordei seminibus." The ancients, as well as the moderns, attributed poisonous qualities to the *L. temulentum*; and even now it is believed in some countries, that the *Wheat* changes into *Darnel*."

1. *L. peren'ne*, Linn. (Fig. 203.) *perennial Darnel*, or *Rye-grass*. Spikelets much longer than the gluma; florets awnless; root perennial.

English Botany, t. 315.—English Flora, vol. i. p. 173.—Lindley, Synopsis, p. 295.—Hooker, British Flora, vol. i. p. 57.—Sinclair, Hort. Gram. Woburn. p. 211.

Root fibrous. *Stems* several, erect in the upper part, bent in the lower, roundish, smooth, striated, leafy. *Leaves* linear, with a long narrow point, smooth and shining beneath, striated and roughish on the upper side. *Sheaths* somewhat compressed, close, smooth, striated, long, especially the upper ones. *Ligula* short, acute. *Inflorescence* an erect, two-ranked spike, from two to twelve inches long. *Spikelets* compressed, many-flowered, sessile, upon the notches of the more or less waved, smooth, and angular rachis. *Gluma* lanceolate, ribbed, smooth, shorter than the spikelet. *Glumelles* two, equal: the outer valve lanceolate, keeled, with a membranous margin and point, which is often more or less cloven; inner membranous, with two lateral roughish ribs. *Stigmas* feathery. *Fruit* linear.

There are several varieties of this species, depending upon the more or less luxuriant state of their growth; and sometimes, according to Sinclair, it is found with the florets in a viviparous state.

Habitat.—Fields, meadows, and waste places; very common.

Perennial; flowering in June and July.

This common species of grass, known by the name of Rye- or Ray-grass, appears to have been cultivated since the year 1677; and much has been said in its praise as a grass of great agricultural utility. Its natural habit is to produce an abundance of seed; it arrives at perfection early in the season, and produces a good supply of herbage the first year of its growth. It is a favourite food with most cattle, and hence its value as a grass for the alternate husbandry, especially when combined with a portion of Cock's-foot (*Dactylis glomerata*), Timothy (*Phleum pratensis*), Meadow Fescue (*Festuca pratensis*), and Meadow Foxtail grasses. By this mixture an early crop of grass is procured, and the after-math very superior: but when Rye-grass is cultivated alone, it is found that the after-math is very small, and rendered coarse by its numerous flowering stems, which are mostly rejected by cattle. Although this is a perennial plant, it is said seldom to continue more than six years; but the abundance of seed which it bears, falling among the root-leaves, produces new plants, with a plentiful succession of herbage.

This grass, in common with many other of the fodder-grasses†, as well as Wheat, Oats, Barley, and Maize, among the *Cereal*, but especially Rye, are liable to the attacks of a peculiar Fungus, *Spermoëdia Cla'vus*, commonly called *Sec'ale cornu'tum*,—ergot, horned, or spurred grain, (Fig. 215. as seen upon the spikelets of *Lolium perenne*, with one of the spurs separated and drawn the natural size.) This Fungus is much less frequent in this country than in France, and is remarkable, not only, like the uredo (p. 159), in depriving the grain of its nutritive matter, but is itself an injurious, or even poisonous substance. Like many other poisonous substances, however, ergot, when properly administered, is found of the greatest utility as a medicine, and is now admitted into the *materia medica* of this and other countries. It is singular that this production, when occurring in great abundance on the ears of corn, especially Rye, as it does in wet situations or seasons, where that grain is extensively cultivated, as on the Continent, where it composes the whole or a considerable part of their bread, by its continued use, tends to produce that most extraordinary malady, the *dry gangrene*, one of the most fearful and distressing diseases to which the human race is heir to, and which has often prevailed epidemically in different parts of the Continent. It commences its attack with greater or less severity, either with severe convulsions or with general weakness, weariness, and a feeling as of insects creeping over the skin: when these symptoms have continued some time, the extremities become

† *Phalaris canariensis*, *Phleum pratensis*, *Alopecurus pratensis*, *Agrostis alba*, *Aira cristata*, *Poa fluitans*, *Festuca duruiscula*, *Arundo arenaria*, *Elymus arenarius*, *Triticum junceum* and *repens*, *Holcus lanatus*, *Arrhenatherum avenaceum*, &c.

cold, white, stiff, benumbed, and at length quite insensible, after which succeed excruciating pains, together with fever, headach, and sometimes bleeding from the nose; finally, the affected parts, and in the first instance the fingers and arms, afterwards the toes and legs, shrivel, dry up, and *drop off by the joints*, when the parts heal up—or before this, life is exhausted. Such is the account of this dreadful disease, given by Lang, a physician of Lucerne.

The manner in which ergot is produced, is variously stated by authors. According to Willdenow, it may be produced at any time in Rye sown in a rich soil, by watering the plants excessively in warm weather. Fontana has alleged that ergot may be propagated from plant to plant, and that he has expressly transmitted it by contact from ear to ear. Hertwig, however, by very careful experiments, came to a different conclusion. Others again assert, that it is produced by an insect, a species of butterfly; and General Martin Field, having observed flies to puncture the glumes of Rye during its milky state, imitated the process by puncturing them with a needle, and found that in both cases the juice exuded, and in four days a little black point was visible, which he affirms gradually became a spur. But De Candolle and others maintain that it is a distinct parasitic plant. The only way, as Mr. Berkeley observes, of deciding the point, would be to institute inquiries as to the manner in which it commences its growth, as Brongniart has done respecting *Uredo segetum*, as stated in *Ann. des Sciences*, vol. xx. p. 171.

2. *L. temulen'tum*, Linn. (Fig. 208.) *bearded Darnel*. Spikelets equal in length with the gluma; florets awned; root annual.

English Botany, t. 1124.—English Flora, vol. i. p. 174.—Lindley, Synopsis, p. 295.—Hooker, British Flora, vol. i. p. 57.—Sinclair, Hort. Gram. Woburn. p. 397.

β. (Fig. 205.) Florets without or with a short awn. *Lo'lium arven'se*. English Botany, t. 1125.—English Flora, vol. i. p. 175.—Lindley, Synopsis, p. 295.—Hooker, British Flora, vol. i. p. 57.

Root fibrous, downy. *Stem* from one to three feet high, round, striated, leafy, smooth and shining below, roughish above. *Leaves* linear; with a tapering point, roughish, especially on the upper side. *Sheaths* striated, roughish. *Ligula* short, obtuse, mostly torn. *Inflorescence* an erect spike, from six to twelve inches long; the rachis notched, angular, slightly waved, and roughish. *Spikelets* alternate, compressed, the lower ones having mostly two *glumes*: the *outer* one as long as the spikelets, frequently half as long again, lanceolate, numerously ribbed; the *inner* small, membranous, close pressed to the channel of the rachis, gradually diminishing in size in each upper spikelet, at length entirely disappearing. *Glumelles* equal: the *outer* concave, with four indistinct ribs near the membranous margin, and a slight keel terminating in a roughish *awn* of greater or less length and



204. *Knappia agrostidea*.



205. *Lolium arvense*.



206. *Cynodon dactylon*.



207. *Digitaria sanguinalis*.



208. *Lolium temulentum*.



209. *Retbolia incurvata*.

rigidity. The awn is the only character by which *L. arvensis* is considered as a distinct species from the present; but the variable length which it is found leads me to consider it only as a variety: the inner valve membranous, with two lateral roughish ribs. Fruit oblong, furrowed on one side.

Habitat.—Corn-fields. Frequent in various parts of England and Ireland, less so in Scotland.

Annual; flowering in July.

This is the only species among the grasses that produces grain with any deleterious properties. It appears to possess powerful narcotic, and at the same time acrid qualities, producing disagreeable and even fatal effects. Seeger, in the experiments which he made with it, found it always to cause general tremor of the body; and Cordier found, by experiments which he made upon himself, that, by eating bread made with the flour, he felt confusion of sight and ideas, languor, heaviness, and alternate attacks of somnolency and vomiting. Serious accidents have sometimes occurred by its accidental mixture with wheaten flour, but in this country it does not grow in sufficient quantity to be often of any serious consequence. It is said to be used sometimes for giving an intoxicating quality to fermented liquors; and in China and Japan, where it also grows, its use is forbidden by law. The deleterious effects of *lolium* appear to have been long known. Among the Arabs it is called *zivan*, and it is thought the word *rosch* in some instances means the same thing. It is generally supposed that it is this plant which is referred to by Virgil—

“ ————— interque nitentiæ culta
Infelix *Lolium*, et sterilis dominantur avenæ;”

for, in warm climates, *Lolium* and the barren Oat sometimes grow so rank and abundant as to choke the Wheat. The late Sir J. D. Michalles and others think that the Greek word ζιζανία, which is translated *tares* in our text of the 13th chapter of St. Matthew's Gospel, the 25th and following verses, would be better *darnel*, and would convey the meaning of the parable more fully. From the parable above quoted, it will appear with what care the Jews disposed of the base grain, by destroying it in the field with fire, after selecting it from the Wheat.

GENUS L. ROTTBOLLIA. LINN. *Hard-grass*.

GEN. CHAR. *Inflorescence* a two-sided spike. *Spikelets* alternate, one or two flowered. *Glumes* of two valves, sometimes single, lateral. *Glumelles* two, awnless, imbedded in the notches of the rachis.—Named in honour of *Rottböll*, a Professor of Botany at Copenhagen.

1. *R. incurva*'ta, Linn. (Fig. 209.) *Sea Hard-grass*. Spike cylindrical, tapering; glumes united at the base.

English Botany, t. 760.—English Flora, vol. i. p. 175.—Hooker, British Flora, vol. i. p. 68.—*Ophiurus incurva'tus*, Beauv. Lindley, Synopsis, p. 295.

β. more slender; spike nearly erect. *Rottbol'lia filifor'mis*, Roth.

Root small, fibrous, downy. *Stems* numerous, procumbent, and spreading at the base, the upper part erect, from six to twelve inches long, round, hard, smooth and shining, leafy. *Leaves* narrow, linear, striated, smooth on the under side, rough above and on the margins. *Sheaths* slightly swelling, smooth, and striated. *Ligula* short, obtuse. *Inflorescence* an erect, cylindrical, incurved spike. *Rachis* remarkably flexuose, forming a joint at the base of each floret, at which it readily separates, especially when matured, carrying with it the floret containing the ripe fruit. *Spikelets* spreading when in flower, but, both before and after, close pressed within the notches of the rachis, so as to form a round, smooth surface. *Glumes* lanceolate, united at the base, sometimes the whole length, and forming a single valve closely fitting the notches of the rachis, ribbed. *Florets* one or two, but only one perfect, the second mostly rudimentary. *Glumelles* two, lanceolate, equal, membranous. *Anthers* yellow. *Stigmas* feathery, spreading. *Fruit* oblong, enclosed within the florets.

Habitat.—Sea-coast, in salt marshes; not very common. Abundant in Ireland. β. Aberlady Bay, Scotland—*G. Don*.

Annual; flowering from July to August.

GENUS LI. KNAP'PIA. Sm. *Knappia*.

GEN. CHAR. *Inflorescence* racemose, simple. *Glumes* two, truncated, nearly equal, awnless. *Glumelles* two, equal, obtuse, awnless, hairy.—Named in honour of *Mr. Knapp*, an English botanist, and author of "Gramina Britannica," or representations of the British grasses.

1. *K. agrosti'dea*, Sm. (Fig. 204.) *early Knappia*.

English Botany, t. 1127.—English Flora, vol. i. p. 84.—Hooker, British Flora, vol. i. p. 58.—*Agros'tis min'ima*, Linn., *Chamagros'tis min'ima*, Borkh., Lindley, Synopsis, p. 301.

The whole plant very small and delicate, not more than an inch or two inches and a half high, and "only one species is known." *Root* long, of numerous small branched fibres. *Stems* several from the same root, erect, smooth, slender, triangular. *Leaves* short, linear, obtuse, roughish: *sheaths* nearly as long, pale, thin, membranous at the base, somewhat inflated; the lower ones shortly fade and decay: *ligula* obtuse, torn at the extremity. *Inflorescence* a simple raceme of few erect flowers, rachis somewhat zigzag in the upper part. *Glumes* two, nearly equal, truncated at the apex, compressed and green or purplish

at the back, pale and membranous on the edges. *Glumelles* two, equal in length, shorter than the glumes, delicate, thin, white, membranous, clothed and ciliated with fine silky hairs; the *outer* valve broadest, embracing the *inner*. *Stamens* longer than the glumes, anthers with two small terminal beaks. *Stigmas* long, feathery. *Fruit* obovate, slightly compressed, pale brown, striated and "beautifully dotted," as observed by Sir W. J. Hooker.

Habitat.—Very rare, sandy fields near the sea, Essex, near the mouth of the Thames. Wales, and on the south-west coast of Anglesea, frequent—*Rev. H. Davis*.

Annual; flowering in March and April.

This diminutive grass is more interesting as a rare and beautiful botanical curiosity than from any known or valuable properties that it possesses; but, though so small, like all other of the productions of Nature, it affords to the reflecting mind abundant matter for investigation:

"By every pleasing image they present,
Reflections such as meliorate the heart,
Compose the passions, and exalt the mind."

Its habit will forcibly remind the student of the beautifully expressive allusion to the frailty of grass, made by the Apostle James in the 1st chapter of his Epistle, where he says, "The sun is no sooner risen with a burning heat, but it withereth the grass, and the flower thereof falleth, and the grace of the fashion of it perisheth." The young, the expanding mind, rising in intelligence, cannot be too soon led to the investigation of the simple yet wonderful works of the CREATOR, which are so profusely spread around, and ever display his perfection, supreme intelligence, and infinite wisdom.

GENUS LII. SPARTINA. WILLD. *Cord-grass*.

GEN. CHAR. *Inflorescence* a one-sided spike. *Spikelets* one-sided, single-flowered, in two rows pressed close to the rachis. *Glumes* two, unequal, lanceolate, compressed, pointed or awned. *Glumelles* two, nearly equal, lanceolate, compressed. *Styles* partly united.—"Name derived from its similarity to the *Lygeum Spartum*, or *Bastard Mat-weed*. *Esparto* (from which some authors say it is derived) is a name given to *Stipa tenacissima* by the Spaniards, who make ropes, &c. of it." *Hooker*.

1. *S. stricta*, Smith, (Fig. 211.) *twin-spiked Cord-grass*. Spikes two or three, with very smooth stalks; glumes downy, the outer valve smallest.

English Flora, vol. i. p. 135.—Lindley, Synopsis, p. 298.—Hooker, British Flora, vol. i. p. 58.—*Dactylis stricta*, English Botany, t. 380.

Root with strong fibres and creeping *underground stems*. Plant somewhat tufted, tough, and rigid. *Stem* erect, from one to two feet high, simple, round, smooth, clothed with leaves to the top, the base surrounded with numerous withered sheaths. *Leaves* short, rigid, striated, smooth, tapering to the point, the margins closely rolled inwards. *Sheaths* close, smooth, striated, long. *Ligula* short, torn. *Inflorescence* an erect, compound, one-sided spike; *rachis* angular, smooth, with a furrow for each spikelet. *Spikelets* in two lateral rows. *Glumes* unequal, lanceolate, more or less downy: the *outer* shortest, narrow, with an acute point, and keeled; *inner* with a strong keel, the margins membranous, tapering at the point, sometimes cloven, having between the lobes a short rigid awn, the termination of the keel. *Florets* single. *Glumelles* two, lanceolate, more or less membranous, both keeled, and less downy than the glumes. *Glumellula* wanting. *Styles* united together about three-fourths of their length. *Stigmas* slender, feathery. *Fruit* oblong, enclosed in the unaltered glumelles.

Habitat.—Salt marshes on the east and south-east coast of England, not common.

Perennial; flowering in August.

GENUS LIII. CYNODON. RICH. *Dog's-tooth-grass*.

GEN. CHAR. *Inflorescence* a compound spike. *Spikelets* one-sided, in two or more rows. *Glumes* two, nearly equal, keeled, spreading. *Florets* one-flowered. *Glumelles* shorter than the glumes, awnless, compressed, keeled; the *outer* valve broadest, enwrapping the shorter *inner* one, becoming hard and forming a coat to the ovate seed.—Name from *κύων*, a dog, and *ὀδὺς*, a tooth.

1. *C. Dac'tylon*, Pers. (Fig. 206.) *creeping Dog's-tooth-grass*. Spikes from three to five together; glumelles smooth, external one somewhat ciliated, internal with a bristle at its base.

English Flora, vol. i. p. 95.—Lindley, Synopsis, p. 298.—Hooker, British Flora, vol. i. p. 58.—Sinclair, Hort. Gram. Woburn. p. 290.—*Panicum Dac'tylon*, Linn. English Botany, t. 850.

Root long, fibrous, branched, with numerous hard, branched *underground stems*. *Stems* long, prostrate, numerous branched and matted, and frequently sending out roots from the numerous joints; branches very leafy, and copiously clothed around their base with sheath and decayed leaves; *flowering* stems at length ascending leafy to the top, and terminating in from three to five straight, spreading, rigid spikes. *Leaves* short, tapering to the point, slightly hairy, and glaucous. *Sheaths* long, striated, smooth, upper ones terminating in a bristle-shaped leaf, or frequently without. *Ligula* hairy. *Spikes* linear: the *florets* arranged in two or more close alternate rows, nearly

sessile, on an angular, somewhat rough, striated, zigzag rachis, glossy, mostly purplish. *Glumes* narrow, acute, keeled, rough towards the point, spreading, which makes the spikes appear rough and spiny. *Glumelles* unequal, smooth, compressed, keeled; the *outer* valve much the broadest, slightly hairy on the keel and inner border, enwrapping the smaller *inner* valve. *Glumellules* two small scales. *Styles* distinct, long. *Stigmas* feathery. *Fruit* small, ovate, enclosed in the hardened glumelles.

Habitat.—Very rare; on the sandy shore between Penzance and Marazion, Cornwall.

Perennial; flowering in July and August.

The long, branched, and rooting underground stems of this plant are admirably suited to the loose sandy situation of their growth.

This species, according to A. B. Lambert, Esq. in the 6th vol. of the "Transactions of the Linnean Society," is identical with the famous *doobgrass* of the Hindoos, who worship it in the most extravagant manner, as the "Divinity not subject to age or death—the armour of India, the preserver of regions, the destroyer of enemies, a gem that gives increase to the fields," &c.—(See the Works of Sir Wm. Jones, vol. ii.)

GENUS LIV. DIGITARIA. SCOPOLI. *Finger-grass*.

GEN. CHAR. *Inflorescence* a compound spike. *Spikelets* arranged on one side of the waved rachis. *Glumes* of one or two very unequal valves; the *outer* sometimes wanting. *Florets* two: the *perfect* one of two cartilaginous, nearly equal valves; the *imperfect* one a single valve. *Fruit* coated with the hardened glumelles.—Named from *digitus*, a *finger*.

1. *D. sanguinalis*, Scop. (Fig. 207.) *hairy Cock's-foot- or Finger-grass*. Leaves and sheaths hairy; glumes oblong, smooth, the larger one rough on the margins only.

English Flora, vol. i. p. 96.—Lindley, Synopsis, p. 299.—Hooker, British Flora, vol. i. p. 58.—Sinclair, Hort. Gram. Woburn. p. 294.—*Panicum sanguinale*, Linn. English Botany, t. 849.

Root fibrous. *Stems* numerous, bent and branched at the base, erect above, from twelve to eighteen inches high, slender, round, smooth, striated, leafy. *Leaves* short, broad, lanceolate, the margins waved, striated, smooth on the under side, roughish above, and, as well as their long, somewhat inflated *sheaths*, scattered over with hairs, those on the latter arising from small tubercles. *Ligula* short, mostly torn. *Inflorescence* of from three to six or eight spreading *spikes*, terminating the stem. *Rachis* waved, angular, deeply furrowed, roughish, with a broad flat rib on one side. *Spikelets* two together, the footstalks an-

gular, rough, one longer than the other, arranged alternately at each flexure of the rachis. *Glumes* of two very unequal valves: the *outer* one very small, ribbed, often absent; the *inner* oblong, the length of the florets, with about five ribs, purple, smooth except on the margin, which is rough or downy. *Florets* two, smooth, and glossy, becoming hard and cartilaginous: the *perfect* one of two nearly equal valves; the *outer* concave with inflexed margins, the *inner* flat: the *imperfect* floret of one valve. *Anthers* small. *Style* thread-shaped, as long as the stamens. *Stigmas* short, feathery. *Fruit* enclosed in the hardened glumella.

Habitat.—In cultivated fields, Battersea Fields, near London. The other stations given in English Flora, &c. it is thought belong to the following species.

Annual; flowering in July and August.

This plant is of no agricultural utility. Birds are very fond of the seeds. In some parts of Germany they are said to be used as sago, and, when boiled in milk or wine, to form an extremely palatable food. The specific name, *sanguinalis*, is said to have been given to it, not from its colour, but on account of boys in Germany mischievously thrusting the spikes up the noses of their companions, by which means it makes them bleed.

2. *D. humifu'sa*, Pers. (Fig. 210.) *smooth Cock's-foot- or Finger-grass*. Leaves and sheaths smooth; glumes ovate, downy.

Hooker, in English Botany, Supplement, t. 2613.—British Flora, vol. i. p. 59.—Lindley, Synopsis, Supplement, p. 333.

Root of numerous branched fibres. Plant tufted, and of a more or less purplish hue. *Stems* numerous, bent at the base, and spreading, becoming erect, slender, round, smooth, striated, from three to six inches high, leafy. *Leaves* broadly linear, lanceolate, quite smooth to the touch, except a roughness in the margins, with a rather prominent midrib, and several slenderer lateral ones. *Sheaths* swollen, striated; the upper long, and quite smooth; the lower short, and with a few occasional hairs on the margins, but otherwise quite free from hairs or roughness. *Ligula* short, obtuse. *Inflorescence* similar to the last, the *spikes* varying in number from two to four. *Rachis* with a broad, striated wing, having pale, narrow, rough margins. *Spikelets* two, sometimes three together, one on a longer footstalk than the others, nearly smooth, angular. *Glumes* very unequal: the *outer* a small, smooth, blunt, membranous scale, sometimes wanting; the *inner* ovate, equal in length to the florets, downy, with from three to five smooth green ribs. The *imperfect floret* of one valve, similar to the larger valve of the glumes; the *perfect* one of two dark purple, shining, concave valves, beautifully marked with numerous close dotted lines, the margins pale and membranous, rolling inwards, at length forming a hardened investment for the fruit. *Anthers* small, purple. *Style*

thread-shaped, as long as the valves. *Stigmas* protruding, short, feathery.

Habitat.—"On loose sand at Weybridge, Sussex—*Mr. Borrer*; who says that the Ipswich *D. sanguinalis* is this, and thinks that the Norfolk and Suffolk stations, assigned to that plant in E. Flora, probably belong to the present. Once found at Dalbeth, near Glasgow—*Mr. Hopkirk*." Yarmouth—*Mr. J. D. Hooker*.

Annual; flowering in July and August.

ORDER III.

TRIGYN'IA. 3 PISTILS.

GENUS LV. MON'TIA. LINN. *Blinks*.

Nat. Ord. PORTULAC'ÆÆ.

GEN. CHAR. *Calyx* inferior, of two ovate abrupt pieces, united at the base. *Corolla* of five unequal petals, united at the base. *Capsule* one-celled, with three valves and three seeds.—Named in honour of *Joseph de Monti*, a Professor of Botany and Natural History at Bologna.

1. *M. fontana*, Linn. (Fig. 212.) *Water Blinks*, or *Water Chickweed*.

English Botany, t. 1206.—English Flora, vol. i. p. 186.—Lindley, Synopsis, p. 62.—Hooker, British Flora, vol. i. p. 59.

Root small, fibrous. Plant varying in height from one to four inches, of a shining pale-green, often with a yellowish hue, quite smooth and succulent. *Stems* much branched and spreading, often putting out roots from the axils of the leaves. *Leaves* small, opposite, spatulate, entire. *Flowers* small, white, arising from the base of the leaves, or terminating the stems, at first drooping, and expanding themselves only in the bright sunshine; their *footstalks* simple, or branched. *Calyx* of two, sometimes three, permanent pieces. *Corolla* of five petals, three smaller than the others, and having the stamens inserted into them. *Styles* very short. *Stigmas* three, with spreading branches. *Capsule* erect, roundish, one-celled, containing three black, shining, dotted seeds; its three valves, after discharging the seeds, are spreading, and have their margins rolled inwards.

Habitat.—On the side of streams, springs, and in wet places, frequent.

Annual; flowering from May to July.

GENUS LVI. HOLOS'TEUM. LINN. *Jagged Chickweed.*

Nat. Ord. CARYO'PHYLLÉE.

GEN. CHAR. *Calyx* inferior, of five ovate pieces. *Petals* five, jagged towards the extremity. *Capsule* one-celled, opening at the apex with six teeth. *Seeds* numerous, furrowed on one side, and dotted, —Name from *ολος*, *all*, and *οστέον*, *bone*; by antiphrasis, the texture of the plant being the very reverse of the meaning—soft and delicate.

1. *H. umbellatum*, Linn. (Fig. 213.) *umbelliferous Jagged Chickweed.* Flowers umbellate, reflexed after flowering, at length erect; leaves ovate, acute.

English Botany, t. 27.—English Flora, p. 187.—Lindley, Synopsis, p. 50.—Hooker, British Flora, vol. i. p. 59.

Root small, fibrous. *Stems* weak, bent and branched at the base, the upper part erect, from four to five inches high, round, the lower part smooth and leafy, the upper naked, more or less clothed with glandular hairs. *Leaves* opposite, spreading, ovate, oblong, with an acute point, single-ribbed, glaucous, and of a somewhat succulent texture; the *footstalks* dilated, and often combined at the base. *Flowers* in a terminal umbel, mostly five, their stalks simple, spreading, or reflexed, having at the base several small *bractea*. *Calyx* of five ovate, acute, permanent pieces. *Corolla* of five oblong, unequally jagged or toothed petals, of a white or reddish hue. *Anthers* roundish.* *Styles* short, slender. *Stigmas* downy. *Capsule* cylindrical, its six teeth finally separating into as many valves. *Seeds* numerous, attached to a central placenta, rough, roundish, its *embryo* folded back in the albumen.

Habitat.—On old walls; rare. About Norwich and Bury.

Annual; flowering in April.

This genus is nearly allied to *Cerastium*. The jagged, not cloven, extremity of the petals, and the number of stamens, will, however, readily distinguish it.

GENUS LVII. POLYCAR'PON. LINN. *All-seed.*

Nat. Ord. ILLECE'BRÉE.

GEN. CHAR. *Calyx* inferior, of five ovate mucronate pieces, with membranous margins, and united at the base. *Petals* five, notched at the extremity. *Stamens* from three to five. *Capsule* one-celled, three-valved, many-seeded.—Name from *πολυ*, *many*, and *καρπος*, *fruit*; on account of the abundance of seed which it produces.



210.

Digitaria humifusa.



211.

Spartina stricta.



212.

Montia fontana.



213.

Holosteum umbellatum.



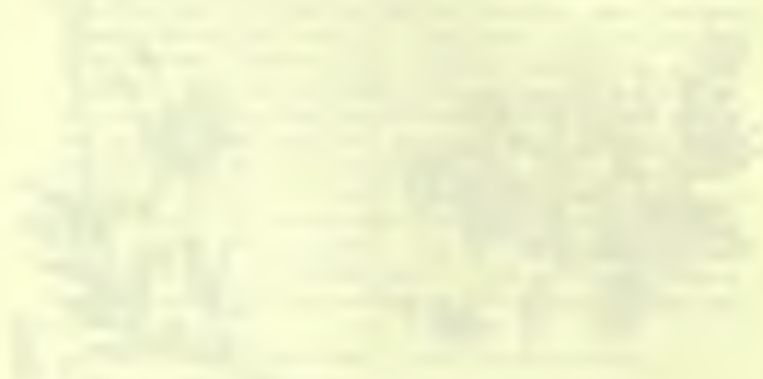
214

Polycarpon tetraphyllum.



215.

Secale cornutum. Uredo segetum.



1. *P. tetraphyl'lum*, Linn. (Fig. 214.) *four-leaved All-seed*. Leaves of the stem whorled in fours, those of the branches opposite.

English Botany, t. 1031.—English Flora, vol. i. p. 188.—Lindley, Synopsis, p. 61.—Hooker, British Flora, vol. i. p. 59.

Root long and tapering. *Stems* numerous, spreading upon the surface of the ground, repeatedly branched, and somewhat downy. *Leaves* obovate, on short footstalks, entire, smooth, and rather succulent, arranged in whorls of four on the stems, and two on the branches, having at the base thin membranous *stipulæ*, pointed, with a jagged margin. *Flowers* terminal, in corymbose branches, each division of which having at its base a pair of acute, membranous, pointed, and jagged *bractææ*. *Calyx* of five ovate, keeled, pointed pieces, with pale membranous margins, slightly united at the base. *Petals* five, obovate, notched at the extremity, white, smaller than the calyx leaves, and alternating with them. *Stamens* from three to five. *Styles* short. *Capsule* ovate, of one cell, opening with three valves. *Seeds* small, numerous, attached to a central placenta.

Habitat.—Southern coasts of England—Devonshire, Dorsetshire, and Portland Island.

Annual; flowering during the summer months.

CLASS IV.

TETRA'NDRIA. 4 STAMENS (*equal.*)

ORDER I.

MONOGYN'IA. 1 PISTIL.

GENUS I. DIPSA'CUS. LINN. *Teasel*.

Nat. Ord. DIPSA'CEÆ.

GEN. CHAR. *Flowers* in heads, surrounded by a many-leaved involu-
crum. *Involucellum* with four sides, and eight little excavations. *Calyx* cup-shaped, thickly clothed with short rigid hairs. *Receptacle* with spiny, glumaceous *bractææ*, shorter than the leaves of the involucreum.—Name from διψᾶω, *to be thirsty*; the upper united leaves holding water in their hollows, by which the thirsty traveller may be relieved.

1. *D. Fullo'num*, Linn. (Fig. 216.) *Fuller's Teasel*. Leaves opposite, mostly united; scales of the receptacle hooked backwards at the extremity; involucre spreading.

English Botany, t. 2081.—English Flora, vol. i. p. 192.—Lindley, Synopsis, p. 139.—Hooker, British Flora, vol. i. p. 163.

This plant differs from the following, in the leaves being more frequently united at the base, the leaves of the involucre spreading, the scales of the receptacle hairy, the points recurved and rougher. "These hooks, however, become obsolete by long cultivation in a poor soil, and there is every reason to believe that *D. Fullonum* is but a variety of *D. sylvestris*."

Habitat.—Waste places and hedge banks, but rare.

Biennial; flowering in July and August.

The Teasel is a plant of great importance to the manufacturers of woollen goods, and is cultivated to a considerable extent in our southern counties, as well as in some parts of Yorkshire, and on the Continent. The plants are grown best, and to the greatest perfection, in a strong soil: they are generally cultivated by the joint interests of the farmers and labourers, the former agreeing to find land free of expense, together with manure and the use of his horses, while the latter are at the remaining expense and all the labour, and finally the profits arising from the sale of the heads are equally divided between the two parties. The heads are used in dressing woollen cloths, for which purpose the hooked scales of the receptacle are admirably adapted: indeed, no mechanical contrivance has yet been invented that can supersede or equal them. The plants require much trouble and care in their cultivation, and in the collecting and drying of the heads. The crops are often unequal, and sometimes a complete failure; consequently, their value is very various, according to circumstances, sometimes selling at £4, and at other times at £22 the pack: an acre of land often produces 15 or 16 packs. The packs contain various numbers. The larger terminal heads are called "kings," and there are about 9,000 in a pack; these are used for the dressing of the coarser kinds of cloth. The middlings, sometimes termed "princes," have from 18,000 to 20,000 in a pack, and are used for the finer and more delicate qualities of cloth; and the "scrubs," which are the smallest of the heads, are of but little value. The heads are used by the manufacturers, by fixing them upon frames covering a cylinder, which is rapidly revolved, when the hooks at the extremity of the elastic scales slightly catch the cloth, while another part of the machine draws it under them; by this means the nap is raised to the desired length. The hollow formed by the united base of the leaves, called "Venus's cup," often contains nearly half a pint of fluid, which is esteemed a cosmetic, but with what pretensions we know not.

2. *D. sylvestris*, Linn. (Fig. 217.) *wild Teasel*. Leaves opposite, rarely united; scales of the receptacle straight at the extremity; involucre curved upwards.

English Botany, t. 1032.—English Flora, vol. i. p. 193.—Lindley, Synopsis, p. 139.—Hooker, British Flora, vol. i. p. 64.

Root tapering and branched. *Stem* from four to six feet high, erect, stout, strongly furrowed, rough, with stout prickles, hollow, and having opposite branches towards the top. *Leaves* opposite, oblong or oblong-lanceolate, obtusely and irregularly serrated or jagged, with a strong prickly midrib, and sometimes united at the base, especially the upper ones, forming hollows which are capable of retaining water. *Inflorescence* a close oval head, surrounded by an *involucre* of numerous narrow, spreading, prickly leaves, as long as the head of flowers. *Flowers* numerous, whitish or pink. *Involucellum* four-sided, each side having two narrow excavations, and the margin having a shrivelled appearance. *Calyx* cup-shaped, superior, its tube investing the *ovarium*, and adhering to it, at least at the summit. *Corolla* of one piece (monopetalous), tubular, downy, inserted into the calyx obliquely, four-cleft. *Stamens* alternate with the segments of the corolla. *Ovary* inferior, one-celled, with a single pendulous ovulum. *Fruit* crowned by the calyx. Each floret arises from the base of a lanceolate, membranous scale, with a straight, roughish point, the margins hairy.

Habitat.—Road sides, hedges, &c. in damp situations; frequent in England and Ireland—less common in Scotland. Inchcolm, near Edinburgh—*Maughan*. South side of Duddingston Loch—*Mr. Neill*. River sides about two miles from Ayr—*Mr. J. Wilson*.

Biennial; flowering in July.

3. *D. pilosus*, Linn. (Fig. 218.) *small Teasel*. Leaves on footstalks, with a small leaflet at the base on each side; involucre deflexed, about the length of the heads.

English Botany, t. 877.—English Flora, vol. i. p. 193.—Lindley, Synopsis, p. 139.—Hooker, British Flora, vol. i. p. 64.

Root tapering. *Stem* erect, from three to four feet high, furrowed, rough with prickles, especially towards the top, with spreading, opposite branches. *Leaves* opposite, on rough angular footstalks, ovate-lanceolate, with a tapering point, unequally serrated, accompanied at its base on each side with a small ovate leaflet, and, like the leaves, more or less hairy. *Heads* of flowers rather small, round, hairy. *Involucre* of numerous narrow, lanceolate, pungent, hairy leaves, the margins bristly, about the length of the head, shortly reflexed. *Scales* of the receptacle with straight rigid points, clothed with short down, and fringed with rigid bristles. *Flowers* similar to the last, except that the corolla is larger, white, four, or, according to Smith, five-cleft.

Habitat.—Moist shady situations; not common. In various parts

of Norfolk, Suffolk, and Derbyshire; Arundel Castle, Sussex; Guildford, Surrey; "River Don side, about a mile below Conisbro'," Yorkshire—*Salt's Herbar.* Rare in Scotland—*Lightfoot.*

Biennial; flowering from July to September.

GENUS II. KNAUTIA. LINN. *Knautia*.

Nat. Ord. DIPSA'CEÆ.

GEN. CHAR. *Flowers* in heads, surrounded by a many-leaved *involucrum*. *Involucellum* compressed, with four little excavations. *Calyx* cup-shaped. *Fruit* placed upon a short stalk. *Receptacle* bristly.—Named in honour of *Christopher Knaut*, a botanist of Saxony, who flourished in the latter half of the seventeenth century.

1. *K. arven'sis*, Coulter, (Fig. 219.) *Field Knautia*. Heads many-flowered; *involucellum* with very minute teeth; *calyx* with from eight to sixteen awn-like bristles.

Hooker, *British Flora*, vol. i. p. 64.—Lindley, *Synopsis*, p. 140.—*Scabiosa arven'sis*, *English Botany*, t. 659.—*English Flora*, vol. i. p. 195.

Root tapering, with spreading fibres, putting out several round, hollow, branched, erect *stems*, from two to three feet high. The whole plant hairy. The lower *leaves* on footstalks, lanceolate, more or less serrated; the upper ones deeply cut in a pinnatifid manner, and without footstalks. Sometimes the whole of the leaves are lanceolate, and with the footstalks of variable lengths. *Flowers* large and handsome, in somewhat convex terminal heads of numerous lilac flowers, on longish simple stalks, surrounded by an *involucrum* of numerous lanceolate hairy leaves, and fixed upon a convex bristly *receptacle*: *inner florets* perfect, and with equal segments; the *outer* ones larger, with imperfect stamens, the segments unequal, of a darker colour, and disposed in a radiated manner round the head. *Fruit* on a short, glandular stalk, one-celled, enwrapped in the somewhat hairy tube of the *involucellum*, and crowned by the persistent, cup-shaped, bristly, pappus-like *calyx*.

Habitat.—Pastures and corn-fields; frequent.

Perennial; flowering from June to August.

The whole plant has a bitter, somewhat astringent, nauseous flavour, and was formerly much employed in the cure of some affections of the skin and diseases of the lungs. Sheep and goats are said to eat it, but it does not appear to be generally relished by domestic cattle.



216. *Dipsacus Fullonum.*



217. *Dipsacus sylvestris.*



218. *Dipsacus pilosus.*



219. *Knautia arvensis.*



220. *Scabiosa succisa.*



221. *Scabiosa columbaria.*

GENUS III. SCABIOSA. LINN. *Scabious*.

Nat. Ord. DIPSA'CÆÆ.

GEN. CHAR. *Flowers* in heads, surrounded by a many-leaved *involucrum*. *Involucellum* nearly cylindrical, with eight little excavations, and a membranous plaited limb. *Calyx* with a limb consisting of about five bristles.—Name from *scaber*, rough; on account of the roughness of the surface of the plants.

1. *S. succisa*, Linn. (Fig. 220.) *Devil's-bit Scabious*. Heads of flowers nearly globular; corolla in four equal segments; root-leaves ovate, entire; upper ones lanceolate, toothed.

English Botany, t. 876.—English Flora, vol. i. p. 194.—Lindley, Synopsis, p. 139.—Hooker, British Flora, vol. i. p. 64.

Root with numerous branching fibres, abrupt at the extremity, as if bitten off. *Stem* erect, from one to three feet high, nearly simple, hairs in the upper part pointing upwards, rougher below, with the hairs pointing downwards. The lower or *radical leaves* ovate-entire, with long footstalks; those of the stem, or *cauline* ones, oblong-lanceolate, unequally toothed, sessile or with short stalks, and united at the base, all harsh and hairy. *Flowers* in roundish heads, blue, purplish, or flesh-coloured, on long simple stalks, surrounded by an *involucrum* of numerous lanceolate, hairy leaves; *receptacle* hairy. *Florets* numerous, equal, each accompanied with a lanceolate *bractea*. *Corolla* downy, with four nearly equal segments. *Fruit* crowned by the persistent calyx of about five darkish bristles, and enwrapped in the hairy tube of the *involucellum*, the margin of which is membranous and toothed. *Stamens* large, yellow or purplish. *Pistil* long, with a capitate *stigma*.

Habitat.—Meadows, pastures, and waste places; frequent.

Perennial; flowering from July to September.

The origin of the vulgar name of this plant, we are informed by ancient writers, is from the superstitious notion which they entertained, that the root had been bitten off by the Devil; for they supposed he envied mankind the medicinal benefit they might derive from its virtues. Hence alone, as Sir J. Smith observes, those virtues were presumed; and in proportion as the Devil and his operations are little thought of, they have fallen into oblivion in these our unbelieving days.

2. *S. columb'aria*, Linn. (Fig. 221.) *small Scabious*. Heads of flowers somewhat convex; corolla in five unequal segments; root-leaves ovate, notched or lyrate; those of the stem pinnatifid, with narrow segments.

English Botany, t. 1311.—English Flora, vol. i. p. 195.—Lindley, Synopsis, p. 140.—Hooker, British Flora, vol. i. p. 64.

Root tapering, woody, fibrous. *Stem* erect, from one to two feet

high, round, hairy, especially in the lower part, hollow, leafy, slightly branched above. *Root leaves* various, on footstalks, ovate, oblong crenate, deeply cut or lyrate; those of the stem sessile, pinnatifid, with linear segments. *Flowers* in somewhat convex, terminal heads, pale purplish, on long naked stalks. *Involucrum* of narrow hairy leaves, longer than the flowers. *Receptacle* scarcely hairy. *Florets* numerous, hairy, five-cleft, unequal; the outer ones larger than the others, and forming a ray around the head. *Fruit* crowned by the persistent *calyx* of about five long, dark, roughish bristles. *Involucellum* hairy, forming a tubular envelopment to the fruit; the limb, thin, pale, membranous, crenated, and plaited.

Habitat.—Pastures and waste places, in chalky, limestone, and clayey districts, in England. Rare in Scotland: near Arbroath, Ayrshire, with white flowers—*Mr. G. Don*: plentiful near Montrose and Blackford—*Mr. Murray*.

Perennial; flowering from July to August.

GENUS IV. GALIUM. LINN. *Bed-straw*.

Nat. Ord. STELLATE.

GEN. CHAR. *Corolla* wheel or bell-shaped, four or five-cleft. *Fruit* a dry, indehiscent pericarp, with two cells and two seeds, not crowned by the calyx.—Name from γάλα, *milk*; some species having the property of curdling milk.

* *Fruit smooth. Flowers yellow.*

1. *G. verum*, Linn. (Fig. 222.) *yellow Bed-straw*. Leaves about eight in a whorl, linear, grooved, entire; flowers in dense panicles.

English Botany, t. 660.—English Flora, p. 208.—Lindley, Synopsis, p. 130.—Hooker, British Flora, vol. i. p. 65.

Root with creeping *underground stems*, of a reddish hue. *Flowering stems* erect, from one to two feet high, smooth or somewhat downy, square, branched at the base with numerous whorls of linear reflexed *leaves*, grooved, and of a bright green above, pale on the under side, the margins rolled back, more or less rough, with short rigid points. *Inflorescence* a dense, terminal, downy, branched panicle. *Flowers* small, yellow, very numerous, having a luscious, honey-like smell. *Fruit* blackish.

Habitat.—Dry, waste, sandy places; common.

Perennial; flowering from June to August.

This plant, known by the names of Yellow Ladies' Bed-straw, Cheese Renning, Petty Mugnet, and Yellow Goose-grass, is said to have been used in cheese countries for the purpose of coagulating milk, and

giving a rich colour to the curd, for which purpose it is still used by the Highlanders, in combination with the leaves of the common Nettle, *Urtica dioica*, and a little salt. Boiled with alum-water, it has the property of tinging woollen goods of a yellow colour; and the flowers were long employed in various forms as a cure in epileptic and hysterical complaints, but are now out of use. The *roots*, according to Mr. Curtis, yield a fine red colouring matter not inferior to madder, and are boiled by the Highlanders with the yarn, adding alum to fix the colour. The roots are too small to render its cultivation as a substitute for madder profitable.

2. *G. cruciatum*, Linn. (Fig. 223.) *Crosswort Bed-straw*, *Mugweed*.

Leaves four in a whorl, ovate, hairy; flowers in small, stalked, axillary clusters, each with a pair of small leaves.

English Botany, t. 143.—English Flora, vol. i. p. 199.—Lindley, Synopsis, p. 129.—Hooker, British Flora, vol. i. p. 65.

Root with creeping *underground stems*. *Stem* from ten to eighteen inches high, branched at the base, weak, angular, simple above, clothed with simple hairs. *Leaves* ovate, four in a whorl, sessile, soft with hairs, having a strongish midrib and several lateral, slender, parallel ones. *Inflorescence* in small axillary corymbs, the common stalk bearing a pair, sometimes a whorl of four small leaves. *Flowers* on short stalks, small, yellow, from three to five-cleft; some perfect, bearing stamens and pistil; others with stamens or pistils only. *Fruit* concealed by the leaves, which gradually rise and are deflexed over them as they become perfect, thus forming a protection to them, and concealing them from birds.

Habitat.—Hedges, banks, and shady places; frequent.

Perennial; flowering from May to June.

** *Fruit smooth. Flowers white.*

3. *G. palustre*, Linn. (Fig. 224.) *white Water Bed-straw*. Leaves from four to six in a whorl, unequal in size, oblongo-lanceolate, obtuse, tapering at the base; stem weak, spreading, branched, and, as well as the leaves, more or less rough.

α. Stem and leaves smoothish.—Hooker, British Flora, vol. i. p. 65. —*Ga'lum palustre*, English Botany, t. 1857.—English Flora, p. 200.—Lindley, Synopsis, p. 128.

β. Nerves at the back and margins of the leaves, and angles of the stem, distinctly rough, with mostly reflexed prickles.—Hooker, British Flora, vol. i. p. 65.—*Ga'lum Witheringii*, English Botany, t. 2206.—English Flora, vol. i. p. 200.—Lindley, Synopsis, p. 128.

Root with somewhat creeping *underground stems*. *Stems* very various in size, mostly tall, weak, and slender, angular, much branched,

widely spreading their branches, and supporting themselves upon the stronger plants which grow near, smooth, or more generally the angles are rough, with reflexed sharp points, sometimes only slightly so, at others much more. *Leaves* from four to six together, in rather distant whorls, spreading, oblong or oblong-lanceolate, tapering at the base, obtuse at the apex, sometimes but rarely with a short point; the margins and midrib on the under side mostly rough, with points turned towards the apex: the whorls, especially in the upper part of the stem, of irregular leaves, having two opposite ones narrower and shorter than the others. *Inflorescence* a terminal, ternate, wide-spreading panicle, each division having at its base two or more leaves. *Flowers* white or cream-coloured, numerous, with broad, acute, not pointed segments. *Fruit* quite smooth, frequently abortive.

Habitat.—On the margin of drains, lakes, rivulets, and wet situations; common.

Perennial; flowering in July and August.

G. Witheringii of Smith appears to have been first considered a variety of the present species by Mr. W. Wilson, as quoted by Sir W. J. Hooker, in his *British Flora*. The transition from the smooth to the rough state of the plant, as Mr. Wilson has stated, may be frequently observed on the margins of pools: indeed, the whole plant varies so greatly, as at one time to be not higher than a few inches, and very slender; at others two feet or more, stout, and of a robust habit. It turns blackish in drying, while the following, which grows in similar situations, remains green.

4. *G. uliginosum*, Linn. (Fig. 225.) *rough Marsh Bed-straw*. Leaves six in a whorl, lanceolate, bristle-pointed, their margins, like the angles of the stem, rough, with recurved prickles.

English Botany, t. 1972.—English Flora, vol. i. p. 201.—Lindley, *Synopsis*, p. 129.—Hooker, *British Flora*, vol. i. p. 66.

Root small, with creeping *underground stems*. *Stems* weak and slender, from one to two feet high, angular, the edges rough with reflexed bristles, branched and very brittle. *Leaves* pretty regularly six in a whorl, except the terminal branches, lanceolate, tapering at the base, with an acute discoloured point, which is terminated by a sharp bristle; the margins generally rolled back, and beset with a row of recurved prickles; and not unfrequently there is another less perfect row near it, which are pointed in the contrary direction; the midrib on the under side is also rough, but less so than the margins: sometimes the leaves on the branches approach an ovate, rather than a lanceolate figure. *Inflorescence* in small, terminal, branched panicles of white flowers. *Fruit* small, minutely dotted, seldom both perfected.

Habitat.—Wet meadows, marshes, the sides of drains, &c.; not uncommon.



222.

Galium verum.



223.

Galium cruciatum.



224.

Galium palustre.



225.

Galium uliginosum.



226.

Galium saxatile.



227.

Galium erectum.

Perennial; flowering in July and August.

The whole plant is of a pale-green colour, which it retains after drying. This circumstance, together with the shape of the leaf, readily distinguish it from the preceding species, although specimens occasionally occur with characters intermediate between the two.

5. *G. saxatile*, Linn. (Fig. 226.) *smooth Heath Bed-straw*. Leaves six in a whorl, obovate, obtuse, with a bristle point; stem smooth, prostrate, much branched.

English Botany, t. 815.—English Flora, vol. i. p. 201.—Lindley, Synopsis, p. 129.—Hooker, British Flora, vol. i. p. 66.

Root with long, creeping *underground stems*. *Stems* smooth, much branched, procumbent and slender at the base, varying considerably in length and luxuriance, according to the situation of their growth, bearing numerous whorls of six obovate or oblong, obtuse, or shortly acute leaves, the midrib terminating in a short rigid bristle; the margins smooth, or beset with prickles pointing towards the apex, otherwise smooth and shining like the stem. *Inflorescence* in terminal, spreading, three-branched panicles, bearing an abundance of small white flowers. *Fruit* small: when young, crowned with the capitate stigma upon a rather long style, of a reddish hue, and minutely dotted; when ripe, covered with minute prominent granulations.

Habitat.—Heaths, moors, and mountainous districts; abundant.

Perennial; flowering from June to September.

This plant often grows abundantly on heaths and moors, producing so great a profusion of its milk-white flowers, as completely to clothe the surface; and during the summer months, it may frequently be observed to hang in thick festoons from the overhanging rock or mountain's craggy side.

6. *G. erectum*, Hudson, (Fig. 227.) *upright Bed-straw*. Leaves about eight in a whorl, lanceolate, bristle-pointed, their margins with prickles pointing forward; panicle much branched; stem smooth, weak; segments of the corolla taper-pointed.

English Botany, t. 2067.—English Flora, vol. i. p. 202.—Lindley, Synopsis, p. 129.—Hooker, British Flora, vol. i. p. 66.

- β. Leaves downy beneath.—Hooker, British Flora, vol. i. p. 66.

Root with creeping *underground stems*. *Stem* erect, much branched, square, with rather acute angles, pale, smooth [somewhat hairy beneath the whorls—*Smith*], spreading, from one to two feet high. *Leaves* about eight in a whorl, lanceolate, acute, with a discoloured point terminated by a bristle, quite smooth, and reticulated with veins; the margins slightly reflexed and rough, with pale prickles in a single or mostly double row all pointing forwards; the lower leaves, and sometimes those of the branches, are somewhat ovate, and all are of a pale glaucous hue, especially on the under side. *Inflorescence* in compound

terminal and lateral much-branched panicles, bearing numerous crowded, rather large, white flowers; the segments of the *corolla* spreading, their points acute, tapering into an awn-like point. Sir W. J. Hooker remarks that the variety which he received from Mr. Banks, agrees in every particular with the *E. Bot.* plant, except that the leaves are all minutely, but distinctly and thickly, downy beneath.

Habitat.—Hedges and pastures; not common. Norfolk—*Mr. Crowe*. Portslade, Sussex, and near Cambridge—*Mr. Borrer*. Fishwives' Causeway, Portobello, near Edinburgh—*Maugham*. On the north side of Killiney Hill, Ireland—*Miss Green*. β . Near Plymouth—*Mr. G. Banks*.

Perennial; flowering from June to July.

7. *G. cine'reum*, Allion. (Fig. 228.) *grey spreading Bed-straw*.

Leaves six to eight in a whorl, linear, bristle-pointed, their margins with prickles pointing forwards; stem weak, much branched, smooth; segments of the *corolla* taper-pointed.

English Botany, Supplement, t. 2783.—English Flora, vol. i. p. 203.—Lindley, Synopsis, p. 129.—Hooker, British Flora, vol. i. p. 66.

Stem loosely spreading, from one and a half to two feet high, square, smooth, pale, repeatedly branched, and bearing numerous whorls of from six to eight *leaves*, linear, slightly tapering at the base, with an acute point terminating in a pale bristle, smooth and somewhat glaucous, the margins slightly reflexed and rough, with pale prickles, especially towards the point, in a single row, and pointing forwards; they are either spreading or close pressed. *Inflorescence* in terminal and lateral branched panicles of few flowers: the *corolla* white, larger than in the above species, with horizontal segments, each tipped with a short taper, not bristly point, various in length and direction. *Fruit* smooth, or slightly granulated.

Habitat.—On the banks of the river Leith, near Slateford, three miles from Edinburgh, and near Kinnaird, Angusshire, Scotland—*Mr. G. Don*.

Perennial; flowering in August.

This, Sir J. E. Smith observes, comes very near *G. erectum*, and experience must prove how far its differences are constant. We have been obligingly favoured by Sir W. J. Hooker with specimens found near Bath, which appear intermediate between the two: the leaves are linear, scarcely lanceolate, with veiny reticulations; the margins, especially towards the point, with two rows of prickles; the panicles few-flowered, and the segments of the *corolla* tapering at the point.

8 *G. arista'tum*, Linn. (Fig. 229.) *bearded Bed-straw*. "Leaves six in a whorl, stalked, lanceolate, flat, reticulated with veins, bristle-pointed, with minute marginal prickles pointing forward; stem much branched, spreading, smooth; seeds smooth, kidney-shaped, separated; *corolla* taper-pointed."

English Botany, Supplement, t. 2784.—English Flora, vol. i. p. 204.—Lindley, Synopsis, p. 129.—Hooker, British Flora, vol. i. p. 67.

“The *stems* are numerous, a foot high, upright, with copious spreading branches, square, very smooth. *Leaves* six in a whorl on the main stem, and often on the branches, though sometimes but four or five; the largest above an inch long, on short broad stalks, elliptic-lanceolate, flat, pliant, deep-green on both sides, with many interbranching veins, smooth except the edges, which are very minutely prickly. *Flowers* white, in terminal, forked, aggregate, compound *panicles*, with perfectly smooth, slender, but not capillary stalks. Segments of the *corolla* spreading, each tipped with a taper point of its own substance. *Seeds* becoming kidney-shaped as they ripen, with a central vacancy, smooth, or slightly granulated.”

Habitat.—In Angushshire, Scotland; but not common—*Mr. G. Don*.

Perennial; flowering from July to August.

This plant we have not had an opportunity of examining. The description is that of Sir J. E. Smith, in English Flora.

9. *G. Mollu'go*, Linn. (Fig. 230.) *great Hedge Bed-straw*. Leaves about eight in a whorl, ovate, obtuse, bristle-pointed, the margins rough; panicle large, loose, branched, spreading; segments of the corolla taper-pointed.

English Botany, t. 1673.—English Flora, vol. i. p. 208.—Lindley, Synopsis, p. 129.—Hooker, British Flora, vol. i. p. 67.

Stem from two to four or five feet high, with numerous long, straggling branches, square, pale and shining, swelling about the joints, especially the upper ones, quite smooth or slightly hairy. *Leaves* in rather distant whorls, mostly eight, green above, pale beneath, the margins smooth, or with prickles pointing forwards; the upper leaves ovate-lanceolate; the lower ovate-obtuse, except having a very short acute bristle point; all single-ribbed, and quite smooth or scattered over with hair. *Inflorescence* a much-branched spreading panicle of very numerous white flowers. *Corolla* spreading, its segments three-ribbed, and tapering into a long, bluntish, hair-like point. *Fruit* small, smooth, globular, frequently abortive.

Habitat.—Dry banks, hedges, and thickets: not unfrequent in England; less frequent in Scotland; and more common about Dublin than in any other part of Ireland.

Perennial; flowering from July to August.

We have observed this plant growing so profusely in various parts of the midland counties, as to overtop the hedges, and cover them for several yards with its profusion of snow-white flowers: in such situations few plants can be conceived more lovely in their wild luxuriance, contrasting beautifully with the dark-green foliage of the Hawthorn.

10. *G. pusillum*, Linn. (Fig. 231.) *least Mountain Bed-straw*.

Leaves about eight in a whorl, linear-lanceolate, bristle-pointed, hairy; panicle loose, branched, spreading; segments of the corolla acute.

English Botany, t. 74.—English Flora, vol. i. p. 206.—Lindley, Synopsis, p. 129.—Hooker, British Flora, vol. i. p. 67.

Root with slender, creeping *underground stems*. *Stems* erect, numerous, branched, from four to twelve inches high, square, slender, varying from quite smooth and shining to thickly clothed with short, pale, rigid hairs; the hairiness, however, is limited to the lower part of the stem; the upper, as well as the branches, quite smooth, except occasionally a few hairs about the joints. *Leaves* about eight in a whorl, crowded in the lower part of the stem, lanceolate, tapering at the base, the point acute, terminating in a pale bristle, the margins somewhat recurved; the lower leaves scattered, or thickly clothed with short hairs, the hairiness diminishing in the upper whorls of leaves, which are not unfrequently quite smooth, and sometimes the whole plant is altogether free from hairs; at other times the leaves may be observed with a few hairs on the margins and towards the extremity, which are either spreading or pointed downwards. *Inflorescence* in terminal and lateral branched, spreading panicles. *Flowers* white, with acute, three-nerved segments. *Fruit* small, globular, smooth, and granulated, of a dark-brown colour.

Habitat.—Kendal, Westmorland. Matlock Bath: on the rocks and crevices of the walls opposite Saxton's Hotel, &c., plentiful; Ashwood, near Buxton, and other places in Derbyshire—*Mr. Marnock*. Habbie's How, in the Pentland Hills; Strathblane Hills; and the lower rocks of Clove, in Scotland—*G. and D. Don*. Rocks at Mucruss, Killarney, near Corrofin, and at Rock Forest, County Clare, Ireland.

Perennial; flowering in July and August.

This plant is extremely variable in its hairiness. Some specimens which I collected this last summer (1836) at Matlock, have the whole of their leaves thickly clothed with hairs; other specimens have the leaves hairy only on the margins; while others again are quite free from the least pubescence: in other respects, however, they entirely agree with those plants I have from Habbie's How and other places.

11. *G. Parisien'se*, Linn. (Fig. 232.) *Wall Bed-straw*. Leaves about six in a whorl, lanceolate, bristle-pointed, rough on the margins; flowers in small axillary clusters, with slender spreading branches; stems slender, spreading, rough.

Hooker, British Flora, vol. i. p. 67.—Lindley, Synopsis, p. 130.—*G. gra'cile*, Mertens and Roch.

α. Fruit hispid. *G. Paris'iense*, Linn.

β. Fruit smooth, slightly tuberculated. *G. Angli'cum*, Hudson.—English Botany, t. 384.—English Flora, vol. i. p. 209.



228.

Galium cinereum.



229.

Galium aristatum.



230.

Galium Mollugo.



231.

Galium pusillum.



232.

Galium Parisiense.



233.

Galium saccharatum.

Root small, fibrous, bearing numerous simple *stems*, from three to twelve inches high, slender, angular, rough, with reflexed prickles, and bearing numerous whorls of small reflexed *leaves*; the lower ones somewhat ovate; the upper lanceolate, with an acute, pale, bristle point; the margins reflexed, rough, with prickles pointed forward. *Inflorescence* in small terminal and axillary clusters, the peduncles one or two from the base of almost every whorl of the upper leaves, sometimes from every whorl from the base to the extremity of the stems; and each peduncle bears a pair of narrow *bractæ* at the base of the first divarication, where it separates mostly into three branches, each of which is again subdivided. *Flowers* small, pale, greenish-white; each segment of the *corolla* ribbed, acute. *Fruit* mostly numerous, somewhat kidney-shaped, smooth, slightly tuberculated, in maturity quite separated from each other, or having a central vacancy.

Habitat.—Old walls and dry sandy ground, but rare. In Kent, Norfolk, and Suffolk; Outwell church-yard wall, and near Wisbeach, Cambridgeshire.

Annual; flowering in June and July.

12. *G. saccharatum*, All. (Fig. 233.) *warty-fruited Bed-straw*.

Leaves six in a whorl, lanceolate, the margins rough, with prickles pointing forwards; flower-stalks axillary, three-flowered; fruit reflexed, tuberculated.

Lindley, Synopsis, p. 129.—Hooker, British Flora, vol. i. p. 67.—*Ga'lum verrucosum*, English Botany, t. 2173.—English Flora, vol. i. p. 204.—*Valen'tia Apari'ne*, Linn.

Root small, slender, becoming reddish with drying. *Stems* several, spreading, from six to twelve inches high, somewhat branched, square, the angles rough, with reflexed prickles. *Leaves* lanceolate, acute, with a pale point, six in a whorl, plane, the margins rough, with prickles pointed forwards. *Inflorescence* in axillary clusters of three flowers; the peduncles about as long as the leaves, bearing three small pale yellow *flowers*, the two lateral ones of which are abortive, not bearing pistils. *Fruit* a large double globe, rough, with pyramidal tubercles, becoming reflexed.

Habitat.—Corn-fields, rare. Discovered by *Mr. G. Don*, in corn-fields in the Carse of Gowrie, Scotland. Near Malton, Yorkshire—*Mr. R. Miller*.

Annual; flowering from June to August.

13. *G. tricolor'ne*, Withering, (Fig. 234.) *rough-fruited Corn Bed-straw*. Leaves about eight in a whorl, lanceolate; the margins, midrib, and angles of the stem rough, with reflexed prickles; flower-stalks axillary, three-flowered; fruit reflexed, granulated.

English Botany, t. 1641.—English Flora, vol. i. p. 205.—Lindley, Synopsis, p. 129.—Hooker, British Flora, vol. i. p. 68.

Root small, fibrous. *Stems* several, slender, weak, square, the angles rough, with reflexed prickles. *Leaves* in numerous whorls of about eight, lanceolate; the margins, and sometimes the midrib, rough, with reflexed prickles, which character, together with the granulated, not tuberculated fruit, distinguishes it from the preceding species, for which it appears to have been mistaken.

Habitat.—Dry fields in England. Isle of Thanet; in Surrey; and near Stamford, Lincolnshire—*Hudson*. Oxfordshire, Yorkshire, Gloucestershire, Norfolk, Suffolk—*Rev. G. R. Leathes*. Fields near Carisbrook, Isle of Wight—*Turner and Borrer*.

Annual; flowering in July.

This and the following species, Professor Henslow thinks it probable, have been introduced by the agency of man.

14. *G. spuriūm*, Linn. (Fig. 235.) *smooth-fruited Corn Bed-straw*.

Leaves about eight in a whorl, lanceolate, their margins as well as the stem rough with reflexed prickles; flower-stalks axillary, many-flowered; fruit smooth, spreading.

English Botany, t. 1871.—English Flora, vol. i. p. 206.—Lindley, Synopsis, p. 129.—Hooker, British Flora, vol. i. p. 68.

Root small, fibrous. *Stem* spreading, branched, square, its angles rough with reflexed prickles, as well as the margins and midribs of the lanceolate *leaves*, which are in whorls of from six to nine; the point of each is pale, and terminated by a rather long bristle. *Inflorescence* in axillary clusters; the *peduncles* about the length of the leaves, slender, rough, and bearing from six to eight small yellowish *flowers*, and one or two small *bractææ*. *Fruit* of two small, brown, kidney-shaped lobes, having a central vacancy between them, quite smooth and even, erect or spreading, never recurved.

Habitat.—Corn-fields, near Forfar, rare—*Mr. G. Don*.

Annual; flowering in July.

So nearly allied is this plant, both in habit and appearance, except in the fruit, to the following species, as to induce Sprengel to assert that they are one and the same.

*** *Fruit bristly. Flowers white.*

15. *G. Apari'ne*, Linn. (Fig. 236.) *Goose-grass, or Cleavers*. *Leaves* from six to eight in a whorl, lanceolate, bristly; the margins, midrib, and angles of the stem rough with reflexed prickles; flower-stalks axillary, few-flowered.

English Botany, t. 816.—English Flora, vol. i. p. 210.—Lindley, Synopsis, p. 130.—Hooker, British Flora, vol. i. p. 68.

Root fibrous. *Stem* much branched and spreading, adhering to other plants near which it grows, often from four to six feet long, square and shining, its angles more or less beset with sharp, reflexed, hooked

prickles. *Leaves* in rather distant whorls of from six to eight, lanceolate, tapering at the base, pale at the point, and terminating in a bristle of variable length, green, and scattered over with somewhat hooked bristles on the upper side; the under side pale, smooth, except the midrib, which, like the margins, is fringed with reflexed prickles. *Inflorescence* in axillary clusters of few flowers; *peduncles* about as long as the leaves, supporting from one to four pale yellowish flowers. *Fruit* a double globe, thickly clothed with hooked prickles.

Habitat.—Hedges and bushes; abundant.

Annual; flowering during the summer months.

This plant was called by the Greeks *Philanthropon*, from an idea which they entertained, that the ready manner in which the seeds attach themselves to our habiliments was owing to their love of the human species. The hooked extremity of the hairs by which they are covered, will give a more satisfactory solution of their adhesion, and afford a ready means of dispersing them into various situations suitable to their growth. The seeds are said to form, when roasted, a very good substitute for coffee, far superior to roasted corn. The plant, we are informed by Linnæus, is used in Sweden as a kind of sieve, for which purpose the roughness of its stems and leaves renders it very suitable. It is thought by some country-people to be a great purifier of the blood, for which purpose it is often found to form a part of their spring or herb-broths. The expressed juice is said to be a useful aperient in some kinds of dropsy, and extolled as a remedy against cancerous affections; but the test of experience does not confirm its utility in such diseases.

16. *G. boreale*, Linn. (Fig. 237.) *cross-leaved Bed-straw*. Leaves four in a whorl, lanceolate, three-ribbed, smooth, with rough edges; stem erect.

English Botany, t. 105.—English Flora, vol. i. p. 209.—Lindley, Synopsis, p. 130.—Hooker, British Flora, vol. i. p. 68.

Root with reddish, creeping underground stems. *Stem* erect, from one to two feet high, square, smooth and shining, or roughish with short rigid pubescence; branches short, numerous, opposite, bearing numerous whorls of four lanceolate or ovate-lanceolate leaves, green and smooth above, paler and with three prominent ribs beneath; the margins, the ribs, and frequently the whole of the under side, roughish. *Inflorescence* in compound terminal and lateral branched panicles, each division having one or two floral leaves. *Flowers* numerous, white. *Corolla* of four spreading, somewhat hairy, acute, three-ribbed segments. *Fruit* of two globose or kidney-shaped seeds, thickly clothed with pale hooked bristles.

Habitat.—Moist rocky places; not unfrequent in the North of England, Scotland, and Ireland.

Perennial; flowering in June and July.

GENUS V. RU'BIA. LINN. *Madder*.

Nat. Ord. STELLATÆ.

GEN. CHAR. *Corolla* rotate or campanulate, with from three to five spreading segments. *Fruit* a succulent, smooth, two-lobed berry. —Name from *ruber*, red; on account of the red matter which the roots afford.

1. *R. peregrina*, Linn. (Fig. 238.) *wild Madder*. Leaves from four to six in a whorl, lanceolate, persistent, smooth and shining; the margin and keel rough, with reflexed prickles; flowers five-cleft.

English Botany, t. 851.—English Flora, vol. i. p. 211.—Lindley, Synopsis, p. 131.—Hooker, British Flora, vol. i. p. 69.

Root with numerous creeping, fleshy, reddish *underground stems*. *Stems* branched, spreading, square and striated, the angles rough with reflexed prickles, stout, somewhat shrubby. *Leaves* lanceolate or ovate-lanceolate, in whorls of from four to six each on the stem, frequently on the branches only two or three, evergreen, and remaining attached to the plant; the margin pale, somewhat reflexed when dry, and rough, with stout reflexed prickles, as well as the stout prominent midrib. *Inflorescence* in small terminal and lateral branched panicles of yellowish-green flowers, each subdivision having at their base a pair of lanceolate *bractææ*. *Corolla* rotate or campanulate, of mostly five broad ovate segments, suddenly contracted into a slender point, concave when newly expanded, becoming convex. *Fruit* a smooth, juicy, black and shining, double berry; frequently one of them is abortive.

Habitat.—Stony and sandy ground, in the South-west of England. Not unfrequent in South Wales: Anglesea—*Mr. Wilson*. South side of Howth and Killiney Hill; limestone rocks at Mucruss and Killarney; hedges near Passage, County Cork, Ireland.

Perennial; flowering from June to August.

This species is nearly allied to *Ru'bia tinctoria*, the roots of which furnish us with one of the most useful dyes with which we are acquainted, known by the name of *madder*. The roots are infused in water, to which it imparts its colouring matter, which is afterwards precipitated from it by the addition of alum; it is then collected and prepared either as a pigment or dye-stuff. Madder is but little grown in this country, on account of its being obtained much cheaper from France, Holland, Italy, and Turkey, than it can be grown at home. It has the property of tinging the secretions and excretions of animals that are allowed to feed upon it; and by its means curious bony preparations are made, which shew that the deposition of osseous matter and its removal is continually going on in the animal economy, by the alternate layers of red and white in the bones of animals alternately fed upon madder and ordinary food, and the disappearance of all ad-



234.

Galium tricornes.



235.

Galium spurium.



236.

Galium Aparine.



237.

Galium boreale.



238

Rubia peregrina.



239.

Sherardia arvensis.

ventitious colour when madder as a food has been discontinued for a sufficient length of time. Formerly madder was considered a useful deobstruent and diuretic medicine, but it is now seldom or never used for such purposes.

GENUS VI. SHERARDIA. LINN. *Sherardia*, or *Field Madder*.

Nat. Ord. STELLATÆ.

GEN. CHAR. *Corolla* funnel-shaped, with four segments. *Fruit* crowned with the persistent teeth of the calyx.—“Named in honour of *James Sherard*, an English botanist and patron of botany, whose fine garden at Eltham in Kent gave rise to the famous ‘*Hortus Elthamensis*’ of Dillenius.”

1. *S. arven'sis*, Linn. (Fig. 239.) *blue Sherardia*, *Little Field Madder*. Leaves about six in a whorl; flowers in terminal heads.

English Botany, t. 891.—English Flora, vol. i. p. 196.—Lindley, Synopsis, p. 130.—Hooker, British Flora, vol. i. p. 69.

Root small, somewhat creeping. *Stems* procumbent at the base, erect in the upper part, from four to eight inches long, simple or branched, smooth, or more or less rough with spreading hairs, square, and bearing numerous whorls of about six *leaves*, the lower ones ovate, acute, gradually becoming lanceolate in the upper part of the plant, the margins rolled back and the midrib prominent on the under side; the uppermost whorl of leaves seven or eight united at the base, where they are pale and membranous, forming an involucre to a small head of about eight sessile, small, blue *flowers*. *Calyx* superior, of four roughish lobes, the two opposite ones bifid, its tube adhering to the germen. *Corolla* funnel-shaped, its tube cylindrical, and the limb of four equal, spreading, acute segments. *Fruit* of two united pericarpia, separating at maturity, each containing a solitary erect seed, and crowned by three teeth of the calyx, one being the single tooth; the two lateral ones, each half of the opposite cleft ones.

Habitat.—Corn and fallow fields, especially in a light soil; frequent.

Annual; flowering during the summer months.

This species has much the habit and appearance of a *Galium*, from which, however, it is readily distinguished by the form of its inflorescence and fruit.

GENUS VII. ASPERULA. LINN. *Woodruff*.

Nat. Ord. STELLATÆ.

GEN. CHAR. *Corolla* funnel-shaped, with from three to four segments. *Fruit* not crowned with the calyx.—Name from *asper*, rough; on account of the roughness of some of the species of the genus.

1. *A. odora'ta*, Linn. (Fig. 240.) *sweet Woodruff*. Leaves about eight in a whorl, lanceolate; flowers few, in long-stalked panicles; fruit bristly.

English Botany, t. 755.—English Flora, vol. i. p. 197.—Lindley, Synopsis, p. 130.—Hooker, British Flora, vol. i. p. 69.

Root with branched, creeping *underground stems*. *Stems* erect, from six to twelve inches high, square, smooth. *Leaves* from seven to nine in a whorl, spreading; the lower ones ovate-lanceolate, with an acute point; the upper lanceolate, a bright green on the upper side, and minutely dotted when dry, paler beneath, with a rather prominent midrib, which, as well as the margin, is rough, with prickles pointed forwards. *Inflorescence* in small terminal panicles of few white *flowers*, on longish smooth stalks; each division without, or having at its base one or more narrow linear *bractea*. *Calyx* of four small teeth, disappearing after flowering. *Corolla* funnel-shaped, with a short tube, and four equal, obtuse, spreading segments. *Fruit* of two closely united pericarpia, granulated and clothed with white tubular hooked bristles.

Habitat.—Woods and shady places; frequent.

Perennial; flowering from May to June.

The specific name of this plant is given to it on account of the highly aromatic flavour which it exhales during the process of drying, resembling that of *Anthoxan'thum odora'tum*, which, like it, depends upon the benzoic acid which it contains. The flowers are said to excel in flavour, when made into infusion, that of China teas. In Germany, the whole plant is used to give a grateful flavour to some of their wines; and in many parts of this country it is kept among clothes to protect them from insects.

The English name of this plant is variously spelt by old authors. Dr. Withering says that in some it is spelt *Woodderowffe*; the spelling of which frequently affords great amusement to children—(*w oo dd e — r o w ff e*).

2. *A. arven'sis*, Linn. (Fig. 241.) *Field Woodruff*. Leaves from six to ten in a whorl, linear-lanceolate, obtuse; flowers in terminal clusters, surrounded by long ciliated bractea; fruit smooth; annual.

Banks, in Plymouth and Devonport. Flora. Lob. Ic. t. 801, f. 2.—English Botany, Supplement, t. 2792.—Hooker, British Flora, vol. i. p. 69.

Root fibrous, annual. *Stem* erect, from six to twelve inches high, simple, or with alternate or opposite branches, square, roughish, especially below. *Leaves* from six to ten in rather distant whorls, linear-lanceolate, obtuse, tapering at the base, the lower ones ovate-lanceolate, a bright green above, pale beneath, the margins somewhat reflexed and rough, with prickles pointed forwards. *Inflorescence* in

small terminal heads, surrounded by linear downy *bractæ*; the margins, especially near the base, ciliated, with long, shining, white hairs. *Corolla* small, bright blue. *Fruit* smooth, large, and conspicuous.

Habitat.—Near Devonport—*Mr. C. A. Johns*, 1830; “but where, however, the plant is now nearly, if not quite lost, in consequence of the construction of a railroad.”

Annual.

This species is frequent on the opposite Continent, and appears to be occasionally introduced into this country. Although we have here figured and described it from specimens communicated by Sir W. J. Hooker, we are nevertheless of opinion that it ought not to be admitted into the British Flora, except supplementarily.

3. *A. Cynanchica*, Linn. (Fig. 242.) *small Woodruff*. Leaves linear, four in a whorl, the two opposite leaves gradually diminishing in size in the whorls towards the upper part of the stem.

English Botany, t. 33.—English Flora, vol. i. p. 198.—Lindley, Synopsis, p. 130.—Hooker, British Flora, vol. i. p. 69.

Root fibrous, and usually putting out tufts of numerous square *stems*, from three to six inches high, procumbent, and branched at the base, becoming erect, smooth. *Leaves* four in a whorl; the lower ones small, ovate, and mostly regular; the upper ones linear, having the two opposite ones gradually reduced to small lanceolate stipules, quite smooth, with the margins somewhat reflexed. *Inflorescence* in small terminal branched panicles, of white or lilac flowers. *Corolla* with four acute, three-ribbed, spreading segments. *Fruit* granulated.

Habitat.—Warm situations, especially in chalky districts. We have fine specimens also, grown on clayey soils, from Brodsworth, near Doncaster, and Lincoln Common. It is not found in Scotland or Wales. Abundant on limestone rocks about Corrofin and other places in the County of Clare, and the large Island of Arran, Ireland.

Perennial; flowering in June and July.

This plant was formerly used both as an outward and inward remedy for the cure of Squinancy, or Quinsy; hence its specific name. It appears, however, in modern times, to have entirely lost its reputation, even among the domestic remedies.

GENUS VIII. EXACUM. LINN. *Gentianella*.

Nat. Ord. GENTIANÆ.

GEN. CHAR. *Calyx* of one piece, with a four-cleft extremity. *Corolla* four-cleft, salver-shaped, with a globose tube. *Anthers* bursting longitudinally. *Stigma* capitate, entire. *Capsule* one-celled, two-valved. *Seeds* numerous, attached to the inflexed margin of

the valves.—Name from “*εξ, out, and αγω, to conduct*; anciently applied to the *Erythræa Centaurium*, a genus allied to this, and which was supposed to have the property of ejecting poisons from the stomach.”

1. *E. filiforme*, Smith, (Fig. 243.) *least Gentianella*. Leaves linear, lanceolate, sessile; stem branched, slender; flower-stalks long.

English Botany, t. 235.—English Flora, vol. i. p. 212.—Lindley, Synopsis, p. 177.—Hooker, British Flora, vol. i. p. 70.

Root of numerous small branched fibres. *Stem* slender, erect, from one to four inches high, with mostly opposite branches, arising from the base of the small, opposite, lanceolate leaves; the lower ones largest, spatulate. *Flowers* small, yellow, solitary, on long, slender stalks. *Calyx* of one piece, divided nearly half way down into five acute segments, with membranous edges. *Corolla* salver-shaped, the tube longer than the calyx, thin and pale, minutely dotted, globose, and enlarging with the capsule; the limb yellow, of four spreading, acute segments, imbricated in the bud, and expanding only on bright sunny days. *Stamens* alternating with the segments; the *anthers* oblong, of two cells, bursting longitudinally. *Style* slender, terminating in a rather large, capitate stigma. *Capsule* ovate, compressed, of one cell, opening by two valves, the margins of which are considerably inflexed, so as to apparently divide it into two cells. *Seeds* small, numerous, attached to the margins of the cells.

Habitat.—Sandy or turfy bogs, in the South and South-west of England, as Dorsetshire, Cornwall, Devonshire, Sussex, and Guernsey Near Cork, on Dursey Island, and at Glengariff, in Ireland.

Annual; flowering in July.

This plant is nearly allied to the Gentians, from which it differs in the number of the stamens, and the divisions of the calyx and corolla.

GENUS IX. PLANTAGO. LINN. *Plantain*.

Nat. Ord. PLANTAGINÆ.

GEN. CHAR. *Corolla* of one piece, with four reflexed segments. *Stamens* very long. *Capsule* of two or four cells, membranous, two- or many-seeded, bursting with a transverse incision.—Name from *planta*, the sole of the foot; either on account of the shape of the leaves, or because it grows frequently by road-sides, and is trodden upon.

* *Leaves ovate*.

1. *P. major*, Linn. (Fig. 244.) *greater Plantain*. Leaves broadly ovate, on longish footstalks; spike very long, cylindrical; cells of the capsule many-seeded.



240

Asperula arvensis.



241

Asperula odorata.



242

Asperula cynanchica.



243

Exacum filiforme.



244

Plantago major.



245

Plantago major, var.

English Botany, t. 1558.—English Flora, vol. i. p. 213.—Lindley, Synopsis, p. 169.—Hooker, British Flora, vol. i. p. 70.

Root of numerous long, stout fibres. *Leaves* numerous, radical, broadly ovate, the margin toothed or waved, mostly smooth, large, with from seven to nine prominent parallel ribs, united at the base into a footstalk, mostly as long and frequently longer than the leaf. *Inflorescence* a long, cylindrical spike of very numerous flowers, closely imbricated in the upper part, somewhat distant in the lower, supported on a rather long, round, naked stalk. *Florets* small, each having at its base a small, concave, lanceolate bractea. *Calyx* of four acute, membranous, keeled segments, united at the base. *Corolla* of one piece, with four reflexed, dry, thin segments. *Capsules* small, oval, acute, membranous, each cell containing from six to eight small seeds.

The variety (Fig. 245.) called by Ray the “Besome Plantain, or Plantain with spoky tufts,” has been noticed since the year 1632, when it was found by Dr. Johnson in the Isle of Thanet, and has since been occasionally observed in various parts of the country. The peculiarity of their form is owing to the bracteas becoming foliaceous, which beautifully shews that bracteæ are only diminutive forms of leaves. Another variety is sometimes found, called the “Rose Plantain,” on account of the bracteas forming whorls at the end of the scape, and expanding so as to bear some resemblance to a Rose.

Habitat.—Pastures and road-sides; frequent.

Perennial; flowering during the summer months.

This species was formerly supposed to possess rare medicinal properties, but these are now almost forgotten. The seeds are a favourite food of small birds. The common name of *way-bred* is not inapplicable to this plant, from its seeming to prefer way-sides for its situation of growth. We are also informed by Burnet that it has a peculiar tendency to follow the migration of man, as if domesticated or sympathetically attached to the human race. Thus, although not purposely conveyed, it has followed our colonists to every part of the world, and, amongst the natives in some of our settlements, has been emphatically named the “Englishman’s Foot;” for, with a strange degree of certainty, wherever it is found, there our countrymen have trod.

2. *P. me'dia*, Linn. (Fig. 246.) *hoary Plantain*.—Leaves downy, sessile, or tapering into short, broad footstalks; spike cylindrical; cells of the capsule single-seeded.

English Botany, t. 1559.—English Flora, vol. i. p. 214.—Lindley, Synopsis, p. 169.—Hooker, British Flora, vol. i. p. 70.

Root large and woody. *Leaves* spreading, pressed close to the ground, ovate-acute, entire or slightly toothed, with about six ribs, and more or less clothed with a soft pubescence, sessile, or on a short, broad footstalk. *Inflorescence* similar to the last; the scape mostly long, slender,

bearing a shorter, broader, denser spike. *Bracteas* at the base of the *florets* pale, thin, and shining, with a green keel. *Calyx* pale and shining, as well as the lanceolate reflexed segments of the *corolla*, which gives the spikes a silvery appearance. *Stamens* long. *Stigmas* long, downy. *Cells* of the capsules single-seeded.

Habitat.—Meadows and pastures. Very frequent in England; less so in Scotland. Pea-hill, below Feltrum, Ireland—*Mr. J. White*. But native specimens have not been seen by *Mr. Mackay*.

Perennial; flowering during the summer months.

**** *Leaves lanceolate or linear.***

3. *P. lanceolata*, Linn. (Fig. 247.) *Ribwort Plantain*. Leaves lanceolate; scape angular; spike ovate; capsule with two cells, each single-seeded.

English Botany, t. 507.—English Flora, vol. i. p. 214.—Lindley, Synopsis, p. 169.—Hooker, British Flora, vol. i. p. 70.

Root somewhat woody, with numerous spreading fibres. *Leaves* mostly numerous, spreading or erect, lanceolate, tapering at the base into a channelled footstalk of greater or less length, and surrounded at its insertion with long, soft, glossy hairs, smooth or downy, especially beneath, with about five prominent ribs; the margin smooth, or slightly toothed. *Inflorescence* a compact ovate or ovate-lanceolate spike, upon a long, slender, angular, channelled, downy scape. *Bracteas* hairy, pale at the base, dark-brown at the point and keel. *Corolla* with four pale, spreading, lanceolate, single-ribbed segments. *Stamens* long, with large pale anthers. *Cells* of the capsules single-seeded.

Habitat.—Meadows and pastures; abundant.

Perennial; flowering during the summer months.

This is an extremely variable plant as regards the size to which it attains. Fig. 248. represents a state in which it is found in poor gravelly situations; the leaves not an inch long, sessile, or on very short footstalks, and the spike of flowers small and globular. These specimens contrast remarkably by the side of luxuriant plants, with leaves six inches long, and spikes of flowers on stalks eighteen inches high, the bracteas of which are developed into leaves, and forming a large tuft disposed in a rose-like manner. Specimens are also occasionally found, bearing several spikes on the summit of the stalk. Others are also found, with the terminal spike bearing several others in a proliiferous manner; some sessile, others on short stalks. We do not, however, apprehend the student will find any difficulty in recognising any of the various states in which it is found, as being other than monstrosities, or varieties depending upon the soil or situation of its growth. This species has been cultivated under the name of *Rib-grass*, and was thought to possess valuable properties; but it does not appear to be relished by cattle, and has ceased to be esteemed among agriculturists.

4. *P. maritima*, Linn. (Fig. 249.) *Sea-side Plantain*. Leaves linear, channelled, fleshy; scape rounded; spike cylindrical; capsule of two cells, each single-seeded.

English Botany, t. 175.—English Flora, vol. i. p. 215.—Lindley, Synopsis, p. 169.—Hooker, British Flora, vol. i. p. 71.

β. ma'jor, Hook. Leaves almost plane, inclining to lanceolate, toothed, smooth; scape densely hairy.—Br. Fl. vol. i. p. 71.

γ. mi'nor, Hook. Leaves linear-lanceolate, densely hairy, as well as the scape.—Br. Fl. vol. i. p. 71.

Root tapering, with fibrous, spreading branches. *Leaves* numerous, spreading, linear, fleshy, entire or toothed, channelled above, convex beneath, smooth or hairy, of a deep, slightly glaucous green; the base somewhat sheathing, and more or less woolly. *Inflorescence* a slender, cylindrical spike, of numerous small, densely crowded, or loosely imbricated flowers, on round, slender, smooth, or downy *scapes*, longer than the leaves. *Bractees* fleshy, lanceolate, sometimes with a long tapering point. *Corolla* of four pale, lanceolate, single-ribbed, spreading segments. *Capsule* of two cells, each containing a single seed.

Habitat.—Pastures and muddy salt marshes near the sea, or the margins of fresh-water lakes; at the base and also on the tops of the loftiest mountains in Wales and Scotland; frequent.—*β*. On the Island of Cumrae, among rocks—*Sir W. J. Hooker*.—*γ*. Among rocks by the House of Skailie, Pomonde, Orkney—*G. Anderson, Esq.*

Perennial; flowering from June to September.

This, like the above species, varies extremely in its size, sometimes not exceeding two inches high, at others twelve or more. The leaves vary from thread-shape to linear-lanceolate; the margins entire, toothed; and the whole plant is found to vary from quite smooth to being densely clothed with hairs. It is, however, readily distinguished from the other species, by its succulent channelled leaves, its rounded scape, and narrow cylindrical spike.

5. *P. coro'nopus*, Linn. (Fig. 250.) *Buck's-horn Plantain*. Leaves linear, pinnatifid; scape rounded; spike cylindrical; capsule with four cells, each single-seeded.

English Botany, t. 892.—English Flora, vol. i. p. 216.—Lindley, Synopsis, p. 169.—Hooker, British Flora, vol. i. p. 71.

Root tapering, with numerous spreading, branched fibres. *Leaves* numerous, linear, with many narrow-pointed segments, entire toothed, or again divided, pale green, mostly hairy, generally lying close to the ground, and spreading in a radiated manner. *Inflorescence* similar to the last, on long, round, spreading, hairy *scapes*. *Capsule* with four cells, each containing a single seed.

Habitat.—Poor gravelly or sandy soil; frequent.

Annual; flowering from June to August.

This plant, frequently called *Star of the Earth*, varies greatly in size and hairiness. We have specimens with leaves not an inch long, and other specimens with them more than four; the scapes varying in the same proportion; and the spike varies from small and ovate, with few flowers, or cylindrical, two inches long, and closely imbricated.

GENUS X. CENTUNCULUS. LINN. *Chaffweed*.

Nat. Ord. PRIMULACEÆ.

GEN. CHAR. *Corolla* of one piece, the tube swelling, the limb four-cleft. *Stamens* short. *Capsule* of one cell, many-seeded, bursting with a transverse incision.—“Name, it appears, anciently given to *Pimpernel*, a genus allied to this; and derived, according to Theis, from *cento*, a covering, because it was a little weed that covered the cultivated fields.”—*Hook*.

1. *C. min'imus*, Linn. (Fig. 251.) *small Chaffweed*, or *Bastard Pimpernel*. Flowers sessile; corolla without glands at the base.—Sm.

English Botany, t. 531.—English Flora, vol. i. p. 217.—Lindley, Synopsis, p. 183.—Hooker, British Flora, vol. i. p. 71.

Root small, fibrous. *Stem* erect, from one to two inches high, simple or branched at the base, slightly angular, smooth, and leafy. *Leaves* opposite below, alternate above, ovate, sessile, entire, smooth, and spreading. *Flowers* very minute, sessile at the base of the leaf, solitary, of short duration, and expanding only in the brilliant sunshine. *Calyx* with four lanceolate, acute segments. *Corolla* white or pale pink, shorter than the calyx, withering and remaining upon the capsule; its tube almost globular; the limb in four ovate, acute, spreading segments. *Capsule* globose, crowned by the persistent style, bursting all round with a transverse incision, and containing numerous angular seeds, fixed upon a central *receptacle*.

Habitat.—Moist sandy or gravelly places, about London; in Kent, Norfolk, Suffolk; the Lowlands of Scotland; marshes at Glengariff, on the Ross Islands, County of Donegal, coast near Coleraine, Ireland, but not common.

Annual; flowering in June and July.

This is one of the least of our flowering plants, seldom exceeding two inches in height, and very slender. It is nearly allied to *Anagallis*.

GENUS XI. EPIMEDIUM. LINN. *Barrenwort*.

Nat. Ord. BERBERIDEE.

GEN. CHAR. *Calyx* of four pieces, deciduous. *Petals* four, inferior,



246.

Plantago media.



247.

Plantago lanceolata.



248.

Plantago lanceolata, var.



249.

Plantago maritima.



250

Plantago coronopus.



251.

Centunculus minimus.



252.

Epimedium alpinum.



253.

Cornus sanguinea.



251.

Cornus Suecica.



255.

Parietaria officinalis.



256.

Alchemilla vulgaris.



257.

Alchemilla alpina.

with a large inflated nectary at the base. *Pod* oblong, two-valved, one-celled, many-seeded.—“Name of obscure origin; applied by Dioscorides to some plant which grew plentifully in Media.”—*Hook.*

1. *E. alpinum*, Linn. (Fig. 252.) *alpine Barrenwort*. Root-leaves none; stem-leaf twice ternate.

English Botany, t. 438.—English Flora, vol. i. p. 219.—Lindley, Synopsis, p. 14.—Hooker, British Flora, vol. i. p. 71.

Root slender, somewhat creeping. *Stems* erect, about a foot high, round, smooth, tender, each bearing a twice or thrice compound leaf. *Leaflets* from one to two inches long, heart-shaped, extremely delicate, veiny, smooth above, glaucous, and somewhat hairy beneath; the margins ciliated, and more or less finely serrated; the lateral leaflets obliquely heart-shaped, the stalk of each swollen at its insertion. *Inflorescence* an irregular branched *panicle*, arising from the swollen base of the leaf, elegantly drooping, and bearing a number of very beautiful and singular flowers; their footstalks with glandular hairs, and having at the base one or two small scales. *Calyx* of four inferior, ovate, concave, green pieces, falling away as the flower expands. *Corolla* of four dark, blood-red, ovate, concave, spreading *petals*, each having at its base a curious, large, yellow, inflated, membranous *nectary*. *Anthers* very curious, formed of two oblong parallel cells, each opening from the bottom to the top by an elastic valve, which, bursting at the bottom, rolls upwards, and allows the discharge of the pollen. *Pod* oblong, pointed, of one cell, formed by two valves, and containing numerous *seeds*.

Habitat.—Subalpine woods and mountain thickets; very rare. Bingley Woods, about six miles from North Bierley, and Fountain's Abbey, Yorkshire. On Carrock Fell and Skiddaw, Cumberland. About the ruins of Mugdoch Castle, near Glasgow. Hunters' Tryste, near Edinburgh.

Perennial; flowering in May and June.

The singular flowers of this remarkable and pretty plant will richly repay the student for a careful investigation of their curious structure. The sepals of the calyx, the petals of the corolla, the nectaries, and stamens, are all inserted opposite each other, and not alternate, as is found to be the arrangement of most flowers. It is a doubtful naturalised plant, and perhaps ought not to be admitted into the list of the British Flora. It is cultivated in the flower-garden, and will grow in any situation, but flourishes best in the shade: its pale-green, delicate, pendent leaves, trembling with each circling breeze, and its rather large, graceful panicle of singular-looking flowers, give it an extremely pleasing and interesting appearance.

GENUS XII. COR'NUS. LINN. *Cornel*.

Nat. Ord. CAPRIFOLIA'CEÆ. § COR'NEÆ.

GEN. CHAR. *Calyx* of four deciduous pieces. *Corolla* superior, of four oblong, acute petals. *Drupe* with a two-celled, two-seeded nut.—Name from *cornu*, a horn; on account of the hardness of the wood, it being thought to be durable as horn.

1. *C. sanguin'ea*, Linn. (Fig. 253.) *wild Cornel*, or *Dogwood*. Arborescent: branches straight, dark-red when full grown; leaves opposite, ovate, green on both sides; cymes flaked.

English Botany, t. 249.—English Flora, vol. i. p. 221.—Lindley, Synopsis, p. 133.—Hooker, British Flora, vol. i. p. 72.

A *shrub*, from four to five feet high, with straight, round, smooth branches, when full grown, of a dark-red colour. *Leaves* opposite, ovate-acute, entire, strongly ribbed, quite smooth, or scattered over with short hairs, green on both sides, but somewhat paler beneath, from one to three inches long, on short channelled *footstalks*, and changing before falling off to a more or less deep-red colour. *Inflorescence* a flat, terminal, naked *cyme*, of more or less numerous, greenish-white *flowers*, having an unpleasant smell. *Calyx* of four minute pieces, shortly falling away. *Petals* four, oblong, spreading, the margins somewhat rolled inwards, and, as well as the *ovarium* and their partial stalks, mostly scattered with hairs. *Fruit* a roundish, dark-purple *drupe*, its nut two-celled, each cell containing a single seed.

Habitat.—Woods and hedges, especially on a chalk or limestone soil. Frequent in England; scarcely wild in Scotland—*Hooker*. South Isles of Arran. Abundant in hedges below Coolock, Ireland; but scarcely indigenous—*Mackay*.

Shrub; flowering in June and July.

Cornel, or common Dogwood-tree, is so named, according to Parkinson, because the fruit of most of the species is not fit even for dogs: it is probable, however, that it may have obtained this name on account of the fruit, as well as the bark and leaves, which possess bitter and astringent properties, having been used for the cure of the mange and other diseases in dogs. The wood is hard, and used for the purpose of making butchers' skewers, toys, &c.; but in former times, when bows and arrows were used as arms of defence, its straight tough branches were highly esteemed for making the arrows. The fleshy part of the fruit contains a considerable proportion of oil, from which it is extracted in France and other parts of the Continent by boiling and pressure, and used for burning, the making of soap, and for the table use; there the young branches are also made into ramrods for guns, and, when bored, used as tubes to pipes. The wood is excellent fuel, and affords one of the best charcoals for the manufacture of gunpowder. It is a

common shrub in plantations, where it is particularly valuable on account of its flourishing under the drip of other trees. The present is readily distinguished from all other species of *Cornus* by its dark-purple fruit, and its leaves changing to a dark-red before they are shed: it is probably from this last circumstance that it has received its specific name.

2. *C. succi'ca*, Linn. (Fig. 254.) *dwarf Cornel*. Herbaceous: leaves opposite, sessile, ovate-acute; flowers in a small umbel, surrounded by a four-leaved, whitish, petaloid involucre, and springing from the axil of the forked extremity of the stem.

English Botany, t. 310.—English Flora, vol. i. p. 221.—Lindley, Synopsis, p. 133.—Hooker, British Flora, vol. i. p. 72.

Root with long, creeping *underground stems*. *Stem* herbaceous, erect, from three to six inches high, square, leafy above, naked below, except one or two pairs of membranous scales, abortive leaves. *Leaves* opposite, sessile, ovate-acute, strongly ribbed, pale-green, smooth and somewhat glaucous beneath, mostly scattered with hairs above, the margin entire or waved. *Inflorescence* a small terminal *umbel* of dark-purple flowers, arising from the axil of two young branches, which do not exceed the general flower-stalk in height, till the fruit is ripe. *Involucre* surrounding the base of the umbel, of four large, ovate, ribbed leaves, white, tinged with red, at length turning green, and may, by a careless observer, be taken for petals: each *flower* is elevated on a short partial stalk, scattered with hairs, and, with the exception of the stamens, of a dark purple. *Fruit* a round red *drupe*, of a sweetish taste.

Habitat.—Moist alpine pastures. Cheviot Hills, Northumberland; and in Scotland, especially on the Highland Mountains.

Perennial; flowering in July and August.

The fruit is said to possess tonic properties, and to increase the appetite; and hence, according to Lightfoot, it is called by the Highlanders *Lus-a-chraois*, or plant of gluttony. It is nearly allied to the American plant, *C. canadensis*; but is smaller, and at once distinguished by its terminal branches; and it is not so readily cultivated.

GENUS XIII. PARIETARIA. LINN. *Wall-Pellitory*.

Nat. Ord. URTICÆ.

GEN. CHAR. *Flowers* polygamous, surrounded by a two-leaved *involucre*. *Perianth* single, inferior, four-cleft, persistent. *Stamens* at first incurved, at length expanded by the elastic force of the *filaments*. *Fruit* single-seeded, enclosed by the enlarged perianth. Name from *paries*, a *wall*; from the circumstance of the species mostly growing on walls and old ruins.

1. *P. officinalis*, Linn. (Fig. 255.) common *Pellitory-of-the-Wall*.

Leaves ovate-lanceolate, three-ribbed above the base; each leaf of the involucre with about seven segments, surrounding seven flowers, the central one fertile.

English Botany, t. 879.—English Flora, vol. i. p. 222.—Lindley, Synopsis, p. 218.—Hooker, British Flora, vol. i. p. 72.

Root somewhat woody, with numerous downy fibres. *Stem* from one to two feet high, erect, or procumbent at the base, angular, or deeply furrowed, branched and leafy, reddish, and more or less thickly clothed with soft pubescence. *Leaves* alternate, ovate-lanceolate, on slender footstalks, three-ribbed above the base, dark-green and nearly smooth above, paler and hairy beneath. *Inflorescence* small, axillary, hairy clusters, arising from the base of the leaves. *Involucre* formed of two pieces, each cut into about seven ovate segments, containing three apparently fertile flowers, but the central one has a pistil only, while the lateral ones have both stamens and pistil; and arising between the two portions of the involucre is a seventh fertile flower, with an entire perianth which closely surrounds the pistil, and remains but little altered as the plant advances to maturity, while the perianth of the perfect flowers becomes much lengthened; the *stamens* at first incurved, the *anthers* closely surrounding the *pistil* in the centre of the flower; when the flower is completely expanded, the *filaments*, which are remarkably jointed, have become highly elastic, but retain their original curved position, until further progress of vegetation is made, or some excitement is given to them by external causes; the stamens are suddenly thrown backwards by the elastic power of the filaments, the shock at the same time bursting the anthers, and the *pollen* is profusely scattered around. This remarkable property in the filaments may be best observed on a hot summer's day, and they are readily excited into motion by agitation of the plant. *Fruit* small, ovate, black and shining, closely invested by the calyx.

Habitat.—Walls, the crevices of rocks, and amongst rubbish; frequent.

Perennial; flowering during the summer months.

This plant was formerly in great repute as a diuretic: the expressed juice was used externally as a fermentation, or sweetened with sugar, and taken internally. It is without smell, and its taste is simply herbaceous. In the practice of the present day, it is seldom or never used. It is reported that this plant, laid in bunches, or scattered among corn in granaries when infested with the corn-weevils, will either destroy or drive away those destructive insects. It is said to contain so great a proportion of nitre, that in making an extract from it, the mass has been known to take fire.

GENUS XIV. ALCHEMILLA. LINN. *Lady's Mantle*.

Nat. Ord. ROSACEÆ.

GEN. CHAR. *Perianth* single, inferior, eight-cleft; the four outer alternate ones smallest. *Fruit* a solitary or double *nut*, surrounded by the persistent *perianth*. *Seed* suspended.—Name from the Arabic *alkan elyeh*, *alchemy*; from its pretended alchemical virtues.

1. *A. vulgaris*, Linn. (Fig. 256.) *common Lady's Mantle*. Leaves plaited, lobed, and serrated.

English Botany, t. 597.—English Flora, vol. i. p. 224.—Lindley, Synopsis, p. 103.—Hooker, British Flora, vol. i. p. 73.

β. *mi'nor*, Hudson. Leaves very downy.

Root woody, with numerous long, branched fibres. *Plant* from four to sixteen inches high. *Stem* procumbent at the base, becoming erect, round, hairy, with alternate branches. *Root leaves* numerous, large, handsome, plaited, with numerous rounded serrated lobes, hairy, especially beneath, on long, channeled, hairy footstalks, slender, and, like the stems, surrounded with pale, dry, brown, membranous scales. *Stem leaves* very small, nearly sessile, alternate, with two large, deeply toothed *stipules*, united at the base. *Inflorescence* in numerous lax, small, terminal, corymbose clusters of yellowish-green hairy *flowers*; the *perianth* inferior, of one piece, tubular; the limb in eight acute spreading segments, the four alternate outer ones smallest.

Habitat.—Pastures, woods, and meadows, common; especially in alpine districts.

Perennial; flowering from June to August.

This is one of our more elegant little plants, and is said by Hoffman and others to possess the power of restoring feminine beauty, however faded, to its earliest freshness.

2. *A. alpi'na*, Linn. (Fig. 257.) *alpine Lady's Mantle*. Leaves in about six serrated segments, green above, white and satiny beneath.

English Botany, t. 244.—English Flora, vol. i. p. 225.—Lindley, Synopsis, p. 103.—Hooker, British Flora, vol. i. p. 73.

Root somewhat woody, with long spreading fibres. *Stem* from four to eight inches high, round, slender, and downy, erect, or slightly procumbent at the base, alternately branched. *Root leaves* on long, round, slender, hairy stalks, the segments varying from five to seven, ovate, lanceolate, closely serrated at the extremity, green and nearly smooth above, thickly clothed beneath with soft, white, silvery hairs, which give it a most beautiful appearance. *Stem leaves* small, sessile, or on short stalks, with two toothed or deeply serrated *stipules*. *Inflorescence* similar to the last. The outer alternate segments of the *perianth* very small.

Habitat.—Alpine and mountainous districts in the North of England. Plentiful in Scotland. Brandon Mountain, County of Kerry, and Ben Bulbin, County of Sligo, Ireland.

Perennial ; flowering in July and August.

Few of our native plants are more elegant than this, and none surpass it in the beauty of its foliage, especially in the splendid silvery appearance of its under side.

3. *A. arven'sis*, Sm. (Fig. 258.) *Field Lady's Mantle, or Parsley Piert*. Leaves in three deep and irregularly cut lobes, pubescent.

English Botany, t. 1011.—English Flora, vol. i. p. 225.—Lindley, Synopsis, p. 103.—Hooker, British Flora, vol. i. p. 73.

Root small, fibrous. *Stems* numerous, more or less prostrate, much branched, very leafy, and from four to six inches long, round, and clothed with soft spreading hairs. *Leaves* alternate, on short stalks, downy, in three deep lobes, each of which is irregularly cut. *Stipules* large, irregularly cut. *Inflorescence* small axillary clusters of pale-green, hairy flowers. *Stamens* varying in number from one to four.

Habitat.—Sandy or gravelly situations on the tops of old walls, &c. frequent.

Annual ; flowering during the summer months.

GENUS XV. ISNAR'DIA. LINN. *Isnardia*.

Nat. Ord. ONAGRA'RIÆ.

GEN. CHAR. *Calyx* superior, the limb of four lobes, persistent. *Petals* four, or wanting. *Stigma* capitate. *Capsule* obovate, with four angles, four valves, four cells, and many-seeded.—Named after *Antoine d'Isnard*, a Botanist and Professor at Paris, in the beginning of the last century.

1. *I. palus'tris*, Linn. (Fig. 259.) *Marsh Isnardia*. Stem procumbent, rooting, smooth ; leaves opposite, ovate, acute, tapering at the base into the footstalk ; flowers axillary, solitary, sessile, without petals.

Hooker, in English Botany, Supplement, t. 2595.—English Flora, vol. i. p. 223.—Lindley, Synopsis, p. 109.—Hooker, British Flora, vol. i. p. 73.

Root with long, creeping *underground stems*, putting out numerous branched fibres from the lower joints of the prostrate stem. *Stem* round, and, as well as all other parts of the plant, quite smooth, with opposite branches, reddish above, darker below. *Leaves* opposite, entire ovate, acute, tapering at the base into a short footstalk, which is reddish, and terminates in the leaf in a branched midrib, somewhat succulent,

green, sometimes with a reddish or purple hue. *Flowers* solitary, sessile, at the base of the footstalks, small, "having two small tubulate bracteas at the base." Limb of the *calyx* of four ovate, acute, green, spreading segments. *Corolla* wanting. *Stamens* small, placed opposite to the segments of the calyx. *Style* short, with a capitate *stigma*. *Capsule* crowned by the persistent limb of the calyx.

Habitat.—Ponds and marshy places, very rare. In a pool at Buxted, Sussex—*Mr. Borrer*. Abundant in a bog on Petersfield Heath, Hampshire—*Miss Riekman and J. Barton, Esq.*

Annual; flowering in July.

GENUS XVI. SANGUISORBA. LINN. *Burnet*.

Nat. Ord. ROSACEÆ.

GEN. CHAR. *Perianth* superior, of four coloured lobes, with two or four scales at the base. *Nuts* one or two, surrounded by the dry persistent tube of the perianth. *Seed* suspended.—Name from *sanguis*, blood, and *sorbeo*, to absorb; from the astringent properties which the plant possesses, and its power of stopping the hæmorrhage from wounds.

1. *S. officinalis*, Linn. (Fig. 250.) *great Burnet*. Spike ovate.

English Botany, t. 1312.—English Flora, vol. i. p. 218.—Lindley, Synopsis, p. 103.—Hooker, British Flora, vol. i. p. 73.

Root large, thick, woody. The whole plant quite smooth. *Stem* erect, from one to two feet high or more, branched, especially above. *Leaves* pinnate, with a terminal leaflet; the rest opposite, sometimes alternate, each ovate, cordate at the base, strongly serrated, green above, paler beneath, with a strongish midrib and numerous branching veins; at the base of almost every footstalk is a small toothed *stipule*, larger in some, smaller or entirely wanting in others; the *radical* leaves with long stalks, those of the stem much shorter. *Inflorescence* a terminal, dense, ovate spike, of a dark dull purple hue, on long naked stalks. *Spike*s generally about an inch long, but very various in size, the upper flowers expanding first. *Perianth* single; the limb of four dark-red or purple, ovate, spreading segments; its tube investing the germen, and having at its base a greenish, four-scaled, ciliated bractea. *Nuts* one, or rarely two, enclosed in the tube, and crowned by the persistent limb of the perianth.

Habitat.—Rather moist limestone or clayey countries, especially in the North of England. Less frequent in the Lowlands of Scotland.

Perennial; flowering in June and July.

This plant does not appear to possess either the medicinal or agricultural properties for which at one time it was thought valuable; it is bitter and somewhat astringent, and not a food much relished by cattle.

2. *S. me'dia*, Smith, (Fig. 261.) *oblong Burnet*. Spikes cylindrical. English Flora, vol. i. p. 219.—Lindley, Synopsis, p. 103.—Hooker British Flora, vol. i. p. 75.

"Taller and larger than the foregoing, with a much longer and truly cylindrical *spike*, of rather pale *flowers*. Mr. Don, who sent it, had scarcely an idea of its being more than a variety."

Habitat.—Pastures in the West of Scotland—*Mr. G. Don*.

Perennial; flowering in July.

This plant we only know from cultivated specimens, and from these our drawing has been made. The spike is longer, and the flowers paler, than in *S. officina'lis*; but whether these characters are constant, and sufficient to distinguish it as a species, experience must prove.

ORDER II.

DIGYN'IA. 2 PISTILS.

GENUS XVII. BUFFO'NIA. SAUVAGES. *Buffonia*.

Nat. Ord. CARYOPHYLL'LEÆ.

GEN. CHAR. *Calyx* of four pieces. *Corolla* of four entire petals. *Capsule* compressed, one-celled, two-valved, two-seeded.—Name given by Sauvages in honour of the celebrated *Buffon*, "who had indeed very slender pretensions to botanical honour; a circumstance supposed to have been indicated by Linnæus in the specific name *tenuifolia*." *Smith*.

1. *B. an'nua*, De Candolle, (Fig. 262.) *annual Buffonia*. Stem loosely paniced from the base, with short, spreading, firm branches; furrows on the calyx straight, parallel; capsules scarcely so long as the calyx; leaves subulate, spreading at the base.

Lindley, Synopsis, p. 47.—Hooker, British Flora, vol. i. p. 74.

B. tenuifo'lia, English Botany, t. 1813.—English Flora, vol. i. p. 226.

Root fibrous. *Stem* erect, about six inches high, round, smooth, alternately branched, leafy. *Leaves* erect, opposite, awl-shaped, three-ribbed, dilated and somewhat sheathing at the base. *Flowers* erect, small, white, solitary, on the roughish terminal and axillary stalks. *Calyx* of four lanceolate, three-ribbed pieces, with rather broad, white, membranous margins. *Corolla* of four oblong, entire, white petals, shorter than the calyx. *Capsule* flattish, ovate, of one cell and two valves, containing two large, ovate, compressed, roughish seeds.



258

Alchemilla arvensis.



259

Isnardia palustris.



260

Sanguisorba officinalis.



261

Sanguisorba media.



262

Buffonia annua.



263

Ilex aquifolium.

Habitat.—The sea-coast; very rare. Said to have been found, in Plukenet's and Dillenius' time, both about Boston, in Lincolnshire, and on Hounslow Heath; but no one has since met with them, and Sir Joseph Banks, who often examined the coast near Boston, was persuaded that *Bupleurum tenuissimum* had been mistaken for the *Buffonia*.

Annual; flowering in June.

ORDER III.

TETRAGYN'IA. 4 PISTILS.

GENUS XVIII. I'LEX. LINN. *Holly*.

Nat. Ord. ILIC'NEÆ. Brongniart.

GEN. CHAR. *Calyx* persistent, of four or five teeth. *Corolla* of four or five petals, distinct or combined at the base. *Stamens* four, sometimes five. *Fruit* fleshy, containing four or five hard, one-seeded *nuts*. *Seed* inverted.—Name *Ilex* is supposed to have been given to this genus on account of the resemblance of its leaves to those of the *Quercus Ilex*, the true *Ilex* of Virgil.

1. *I. aquifo'lium*, Linn. (Fig. 263.) *common Holly*. Leaves ovate, acute, shining, waved and spinous; flowers numerous, axillary, short, subumbellate.

English Botany, t. 496.—English Flora, vol. i. p. 227.—Lindley, Synopsis, p. 74.—Hooker, British Flora, vol. i. p. 74.

A very handsome and ornamental evergreen *tree*, with a smooth, greyish bark. *Leaves* alternate, on short stalks, a deep shining green above, paler beneath, the margins cartilaginous, waved, and with stout, sharp, spinous, divaricating lobes; the upper leaves, especially of old trees, entire, with an acute point. *Inflorescence* short, somewhat umbellated clusters of numerous white *flowers*, arising from the axils of the leaves. *Calyx* small, slightly hairy, with four or five small teeth, remaining upon the fruit. *Corolla* either of four or five distinct, spreading, concave petals, or united at the base into a wheel shape, much larger than the calyx, white, often tinged with pink on the outside. *Fruit* roundish, bright scarlet, fleshy berries, containing four or five hard, single-seeded *nuts*, umbilicated at the apex.

Habitat.—Hedges and woods; frequent, especially in a light sandy or gravelly soil.

Tree; flowering in May and June.

Few trees have been more admired and variously cultivated from the earliest period, than the Holly, also known by the names of Hulver, Hulferl, and Holme. Numerous very beautiful varieties are obtained by cultivation, or accident, as to the shape, size, and a more or less spinous state of the leaf, as well as in its variation of white or spotted colours. When the Dutch fashion of horticulture prevailed in this country, hedges of Holly were planted and kept well clipped in various forms. The celebrated Evelyn, it is said, planted a hedge of it at Say's Court, Deptford, (at the suggestion of Peter the Great, who resided at his house when he worked in the dock-yards at Deptford,) four hundred feet long, nine feet high, and five feet broad; and he asks, "Is there under heaven a more glorious and refreshing object of the kind, than such an impregnable hedge, glittering with its armed and varnished leaves, the taller standards at orderly distances, blushing with their natural coral."

No plant forms better or more desirable fences than the Holly, and few will bear the shears so well; and when a hedge is once formed, perhaps it is the least expense of any other kind to keep it in repair; but it is of tardy growth, and makes very slow progress for a number of years after it is planted. The wood is hard, white, fine-grained, and takes a good polish. It is used for a great variety of purposes, especially by turners and the makers of mathematical instruments.

The bark affords a tenaceous substance, which, when separated by bruising, boiling, and fermentation, forms the substance known by the name of birdlime.

The leaves, as well as the bark, are bitter, and have been used in the cure of coughs and intermittent fevers; and it appears, from experiments made by Dr. Rousseau, of Paris, as detailed in the Transactions of the Medico-Botanical Society of London, that they contain a new vegetable principle called Ilicine, which is equally efficacious with Quinine and Peruvian bark. The remarkable difference observable between the leaves in the lower part of the tree having their edges strongly armed with stout spines, and those on the upper part having their margins quite smooth, is very singular; it would appear to be a means of protection against the injury of cattle, and is the reason of the Holly being considered, in the emblematic language, the token of foresight. This peculiar circumstance in the leaves has not escaped the notice of the poets, and is thus spoken of by Dr. Southey:

O reader! hast thou ever stood to see
The Holly tree?
The eye that contemplates it well, perceives
Its glossy leaves
Order'd by an Intelligence so wise,
As might confound an atheist's sophistries.

Below a circling fence, its leaves are seen
 Wrinkled and keen;
 No grazing cattle through their prickly round
 Can reach to wound;
 But, as they grow where nothing is to fear,
 Smooth and unarm'd the pointless leaves appear.

Various reasons are given by authors as to the origin of decorating churches and dwelling-houses with the branches of Holly during the Christmas festival, but nothing appears to be known with certainty as to its origin, beyond that of its great antiquity. Dr. Chandler supposes this custom to be derived from the Druids, who, he says, decorated their dwelling-places with evergreens during winter, "that the sylvan spirits might repair thither, and remain unnipped by frost and cold winds, until a milder season had renewed the foliage of their darling abodes."—"The Holly (*Creil Thionn*, in Gaelic) is the badge of the clan *Drummond*."

GENUS XIX. POTAMOGETON. LINN. *Pondweed*.

Nat. Ord. FLUVIALES.

GEN. CHAR. *Flowers in spikes, arising from a sheathing bractea, or spatha. Perianth single, of four pieces. Stamens, with the anthers, nearly sessile, opposite the pieces of the perianth. Pistils four, alternating with the stamens, becoming compressed. Nuts each containing a suspended, curved, more or less spiral seed.*—Name from *ποταμος*, a river, and *γειτων*, a neighbour; on account of the species all growing in water.

* *Leaves all opposite; stipules none.*

1. *P. den'sus*, Linn. (Fig. 264.) *opposite-leaved Pondweed*. Leaves opposite, embracing the stem, crowded.

English Botany, t. 397.—English Flora, vol. i. p. 231.—Lindley, Synopsis, p. 248.—Hooker, British Flora, vol. i. p. 75.

Roots fibrous, arising from the lower joints of the long creeping stems. *Stem* naked below, forked and thickly clothed above with opposite, ovate, acuminate or lanceolate, sessile, spreading leaves, embracing the stem, recurved, having a strongish midrib formed of numerous longitudinal cells, and two or three lateral parallel veins united by distant fibres, the margins waved, entire. *Inflorescence* a small round spike of about four green flowers, on a short round stalk, erect when in flower, recurved in seed. "The head is just out of the water during impregnation, after which, by the increase of the branches, it sinks, and ripens the seed, whilst other flowers come forth above. The deeper the water, the larger is the whole plant."

Habitat.—Ditches and slow streams; frequent.

Perennial; flowering in June and July.

****** *Leaves alternate, sheathing, with adnate stipules.*

2. *P. pectinata'tus*, Linn. (Fig. 265.) *Fennel-leaved Pondweed*. Leaves linear or bristle-shaped, single-ribbed; nuts very large, keeled at the back.

English Botany, t. 323.—English Flora, vol. i. p. 237.—Lindley, Synopsis, p. 248.—Hooker, British Flora, vol. i. p. 75.

Root tuberous, with long, creeping, branched stems. *Stem* very slender, numerously branched, and very leafy. *Leaves* narrow, linear, long, slender, acute, alternate, single-ribbed, dilated at the base into thin, pale, membranous *sheaths*, elongated, and cloven at the top, similar to the ligula in grasses. *Spikes* terminal, on a slender stalk, of a few interrupted flowers, which rise above the surface.

Habitat.—In rivers, ponds, and ditches, whether of fresh or salt water.

Perennial; flowering in July.

This is an exceedingly variable plant, especially in the size of its foliage; in clear running streams it is mostly very large, but seldom produces flowers.

******* *Leaves alternate, all linear, submersed; stipules free.*

3. *P. pusil'lus*, Linn. (Fig. 266.) *small Pondweed*. Leaves linear, narrow, opposite or alternate, three to five nerved, with slender lateral veins; peduncle many times longer than the spike.

English Botany, t. 215.—English Flora, vol. i. p. 236.—Lindley, Synopsis, p. 249.—Hooker, British Flora, vol. i. p. 75.

β. ma'jor; stem more compressed. Hooker, British Flora, vol. i. p. 74.—*P. compress'us*, Linn. English Botany, t. 418.—English Flora, vol. i. p. 234.

Root fibrous. *Stem* slender, slightly compressed, branched, submersed, except the spike. *Leaves* alternate below, opposite above, mostly acute, under a line in breadth, often two inches long, the midrib slightly reticulated, lateral veins towards the margin very faint. *Stipules* broader than the leaves, sheathing. *Spikes* short, lateral, from the axils of the leaves, at first short and close, but in maturity loose and interrupted.

β. P. major, although distinguished by Linnæus and later botanists as a species, is considered by others a variety only, a conclusion with which we fully agree.

Habitat.—Ditches, ponds, and slow streams.

Perennial; flowering in July.



264

Potamogeton densus.



235

Potamogeton pectinatus.



266

Potamogeton pusillus.



267

Potamogeton pusillus. var. major.



268

Potamogeton gramineus.



269

Potamogeton acutifolius.

4. *P. gramineus*, Linn. (Fig. 268.) *grassy Pondweed*. Leaves broadly linear, obtuse, three-nerved, lateral veins slender, obscure; peduncle from the axils of the leaves, scarcely longer than the oval spike.

English Botany, t. 2253.—English Flora, vol. i. p. 235.—Hooker, British Flora, vol. i. p. 75.—*P. obtusifolius*, Lindley, Synopsis, p. 249.

Stem slender, wavy, more or less branched, especially near the upper part. *Leaves* about three inches long, crowded, spreading, alternate, except at the extremity, where they are generally opposite, linear, but gradually contracted towards the base. The main rib is accompanied by numerous lateral, parallel, obscure reticulations, with the two outer veins solitary, very slender, sometimes scarcely visible. *Stipules* narrower than the leaves. *Peduncles* invariably axillary. *Spikes* equal in length to the peduncle, which is very short, oval, close, rising above the surface of the water.

The characters founded on the veins of the leaves of this species, are remarkably constant.

Habitat.—Ponds, ditches, and slow streams. Norwich; Deptford; Lancashire; Beverley, Yorkshire.

Perennial; flowering in July.

5. *P. acutifolius*, Link. (Fig. 269.) *sharp-leaved Pondweed*. Leaves linear, acuminate, three-nerved, with numerous intermediate parallel veins running throughout the whole surface; spikes compact, oval, the length of the short peduncle.

Hooker, in English Botany, Supplement, t. 2609.

This and the following species are well distinguished by the many close and parallel nerves.

Habitat.—Ponds and ditches. About Amberley, Henfield, and Lewes, Sussex.

Perennial; flowering in July.

6. *P. zosteraefolius*, Schum. (Fig. 270.) *Grass-wrack-like Pondweed*. Leaves broadly linear, with an oblique acuminate point, three principal nerves, with numerous intermediate ones, occupying the whole surface; stem compressed; peduncles long; spikes cylindrical.

Hooker, British Flora, vol. i. p. 76.—Lindley, Synopsis, p. 249.—*P. cuspidatus*, English Flora, vol. i. p. 235.

Leaves intersected into three equal portions by the principal veins, which, as well as the intermediate ones, are distinct.

Sir James Smith says this has often been confounded with *P. compressum*, but is more robust and of larger growth than that species; and adds, that Professor Schrader had communicated it to him as the *P. cuspidatum* of his Flora Germanica, and this name Sir James had also adopted.

Habitat.—Ponds and rivulets. Hovingham, Yorkshire; in the Lake of Forfar, and also the Lake of Roscobie; and Sir William Hooker, in his British Flora, says he possesses specimens gathered in the Lake of Forfar by Mr. Drummond, with peduncles three to four inches, and spikes cylindrical an inch long.

Perennial; flowering in July.

**** *Leaves alternate, ovate, lanceolate, or oblong, all submersed. Stipules free.*

7. *P. crispus*, Linn. (Fig. 271.) *curled Pondweed*. Leaves lanceolate, waved, serrated, three-nerved.

English Botany, t. 1012.—English Flora, vol. i. p. 233.—Lindley, Synopsis, p. 249.—Hooker, British Flora, vol. i. p. 76.

β. serratius; (Fig. 272.) leaves serrated, not waved.

Leaves alternate below, opposite above, nearly sessile, crisped at the edges, and about two inches in length, slightly reticulated on each side the rib. *Spikes* short, and loose.

β. serratius is *P. serratium* of Hudson, acknowledged by himself to be too near *P. crispum* to deserve to be regarded as a species. It is marked as a variety, with more of the leaves opposite, serrated, and less undulated, than *crispus*.

Habitat.—Ditches, ponds, and rivulets; common.

Perennial; flowering in June and July.

8. *P. perfoliatus*, Linn. (Fig. 273.) *perfoliate Pondweed*. Leaves heart-shaped, clasping the stem, with five to seven principal and numerous smaller intermediate nerves.

English Botany, t. 168.—English Flora, vol. i. p. 230.—Lindley, Synopsis, p. 249.—Hooker, British Flora, vol. i. p. 76.

Leaves sessile, rather ovate, crowded at the upper part of the stem, mostly under two inches in length, brittle to the touch, and of an olive colour, presenting a pellucid oily appearance. *Stems* rather turned upwards. The whole plant is submersed, except the flower-spikes, which, during July and August, rise a little above the surface of the water, and become for a time conspicuous, displaying on the surface their little spikes, covered with a profusion of white pollen.

Habitat.—Ponds and rivers; common.

Perennial; flowering in July and August.

It is justly remarked by Sir James Smith, that the respiration of aquatic plants differs greatly from that of such as inhale atmospheric air, and may be said to bear some analogy to that of fishes when compared with beasts and birds. In aquatic plants, the leaves are altogether different in texture, their cuticle being, like that of fishes, invariably destitute of hairs.

9. *P. lucens*, Linn. (Fig. 274.) *shining Pondweed*. Leaves elliptic-



270

Potamogeton zosterifolius.



271

Potamogeton crispus.



272 *Potamogeton crispus. var. serratus.*



273

Potamogeton perfoliatus.



274

Potamogeton lucens.



275

Potamogeton praelongus.

lanceolate, pointed, with from five to seven lateral parallel veins, springing from the midrib.

English Botany, t. 376.—English Flora, vol. i. p. 232.—Hooker, British Flora, vol. i. p. 76.—*P. Proteus*, Lindley, Synopsis, p. 250.

Leaves on short footstalks, alternate below, frequently opposite above, slightly waved, entire, frequently tapering into a rounded footstalk at the base, well distinguished by the numerous transverse connecting veins, uniting the five or seven main ribs. *Stipula* large and foliaceous. *Stem* long, round, scarcely branched. *Spike* about two inches long, crowded, of a green colour, supported on a strong peduncle, mostly thickened upwards.

“The largest of our species, and very beautiful in the nervation of its leaves. Chamisso and Schlechtendal include this in a division of the genus which has sometimes floating and coriaceous leaves (*folia accessoria*), as it is found by Mr. Wilson at Lyn Maclog. They change its name to *P. Proteus*, and consider the *P. heterophyllus* a variety of it. To me they appear distinct; but aquatic plants of all kinds are extremely liable to vary.”—“Coriaceous leaves rare, ovato-lanceolate, moderately acute, less evidently stalked than in *P. heterophyllus*; foliage more crowded, and stipules larger and (in proportion) narrower, than in that species. *Spikes* twice as long.”—*Wilson, Hooker's British Flora.*

Habitat.—Lakes, ponds, and ditches; common.

Perennial; flowering in June and July.

10. *P. praelongus*, Wulff. (Fig. 274.) *long-stalked Pondweed.* Leaves oblong, principal nerves three, connected by reticulations with several lesser ones; peduncle long.

Hooker, British Flora, vol. i. p. 77.—Cham. in Linneæ, vol. ii. p. 191.—Rich. Iconogr. t. 185.

Leaves invariably oblong, obtuse, also distinguished by the lateral parallel nerves springing from the base, where they clasp the stem, and by the lengthened peduncle. In size it is nearly equal to *P. lucens*.

Habitat.—Lakes and pools. Moss of Litie, Nairnshire; Berwickshire; Brechan.

Perennial; flowering in July.

***** *Leaves alternate; upper ones floating, broader than the rest*
Stipules free.

11. *P. heterophyllus*, Schreb. (Fig. 276.) *various-leaved Pondweed.* Upper leaves elliptical, stalked, floating; lower ones lanceolate; sessile; flower-stalks swelling upwards.

English Botany, t. 1285.—English Flora, vol. i. p. 229.—Lindley, Synopsis, p. 250.—Hooker, British Flora, vol. i. p. 77.

Upper or floating leaves often absent (*Wilson*), mostly under two

inches in length, on footstalks about their own length; submersed ones with from three to five nerves, sessile, linear, lanceolate, waved, one to two inches long, and under half an inch in breadth. *Stipules* under water, close, lanceolate, those above strongly marked with two principal ribs, broad and spreading. *Peduncle* swelling upwards, about three times the length of the dense *spike*.

Habitat.—Ponds and ditches; not uncommon.

Perennial; flowering in June and July.

12. *P. lanceolata* Sm. (Fig. 277.) *lanceolate Pondweed*. Leaves lanceolate, tapering at the base, membranous, from five to seven ribs, with transverse reticulations near the middle rib; floating ones elliptic lanceolate; peduncle scarcely as long as the leaves; spike ovate.

β. without floating leaves.

English Botany, t. 1985.—English Flora, vol. i. p. 233.—Lindley, Synopsis, p. 250.—Hooker, British Flora, vol. i. p. 77.

Leaves alternate, except at the flower-stalks, when they are mostly in pairs, sometimes more, generally under two inches in length; the upper ones are filled throughout with a curious chain-like reticulation, whilst in those under water it is observable only on each side the main rib. *Stipules* narrow, lanceolate. *Peduncles* scarcely as long as the leaves. *Spike* small, oval.

This is nearly allied to the preceding, but is altogether a smaller and less robust growing plant.

Habitat.—Ponds and slow streams. Anglesea, Kincardineshire; Linthothen Loch, Angusshire. *β*. Found with the preceding in a rivulet in Anglesea.

13. *P. rufescens*, Schrad. (Fig. 278.) *reddish Pondweed*. Floating leaves elliptic, oblong, stalked, coriaceous; submersed ones lanceolate, membranous, many-nerved, with numerous connecting veins and linear reticulations.

Hooker, British Flora, vol. i. p. 78.—Lindley, Synopsis, p. 250.—*P. rufescens*, English Botany, t. 1286.—English Flora, vol. i. p. 231.

There is also in this a very close affinity to the preceding species, and it is not easily distinguished by any permanent and marked character. It usually presents a lurid or reddish olive colour, and by this its general appearance it is perhaps the most readily detected. "This does in some situations much resemble *P. lucens*: the coriaceous floating leaves are nearly as acute as the lower ones, differing only in their firmer texture, and in being stalked; the ribs, shape, and size are much the same in both. The lateral ribs or nerves are by no means separate to the base of the leaf, but arise from various parts of the central rib; some of them one-third the length of the leaf from its base; they are six to seven in number on each side, two of them more evident

than the rest; flower-stalk not thickened upwards."—*Wilson*, in *Hooker's British Flora*.

Habitat.—Ditches and slow streams; not unfrequent. *Beverley*, Yorkshire; in the *Gaddie Premnay*, Aberdeenshire; *Anglesea*; near *Glasgow*, and *Forfar*; *Lilleshall Mill-pond*, Shropshire.

Perennial; flowering in July and August.

14. *P. oblongus*, Viv. (Fig. 279.) blunt-fruited broad-leaved Pond-weed. Leaves floating, coriaceous; lower ones sometimes submersed, without leafless petioles.

Hooker, British Flora, vol. i. p. 78.—*Lindley*, Synopsis, p. 250.

Floating leaves more or less coriaceous, submersed ones often absent.

Fruit rounded, and obtuse at the back.

Habitat.—Ditches near *Henfield*—*Mr. D. Turner*.

Perennial; flowering in July.

15. *P. natans*, Linn. (Fig. 280.) sharp-fruited broad-leaved Pond-weed. Submersed leaves linear, membranaceous, not always present; floating ones elliptical, stalked, coriaceous, and many-nerved.

English Botany, t. 1822.—*English Flora*, vol. i. p. 229.—*Lindley*, Synopsis, p. 250.—*Hooker*, British Flora, vol. i. p. 78.

Roots creeping. *Stem* round, several feet in length, much branched. Upper leaves two or three inches long, elliptical or heart-shaped, on long footstalks, nearly opposite, with five or more main ribs springing from the centre one; lower ones often wanting in shallow water, narrow, sessile, alternate. "The lower leaves appear to me to differ from the submersed leaves of all the others (except the last perhaps) in having their substance composed of the same small but distinct cells, or reticulations, as the floating ones." (*Hooker*.) *Stipules* lanceolate, large, and foliaceous. *Peduncle* long, thickened upwards. *Spike* dense, cylindrical, rising several inches above the water.

Habitat.—Ditches and stagnant pools; common.

Perennial; flowering in June and July.

It is at all times a matter of much greater difficulty to cultivate aquatic plants successfully, than such as only require a suitable soil, and free exposure to the common atmosphere of our climate. The aquatic may be indifferent to the particular kind of earth to which its roots are exposed, provided the watery element in which it is immersed be adapted to its habit and nature; but to insure success in its culture, it is not enough that the plant be placed in water, with its roots surrounded with earth, nor does it require extended observation to prove, that it is an important fact, in their natural habitation, that while one is detected revelling in all the luxuriance of growth, amid volumes of pernicious gasses hourly poured forth from some stagnant pool, another may be sought in vain, except in some

Mountain rill,
Wand'ring its wild course from the mountain's breast,
Now, with a brink fantastic, heather-drest,
And playing with the stooping flowers at will.

It is therefore evident that few gardens possess such facilities for the cultivation of aquatics, as to afford an opportunity of placing the various kinds in situations at all approximating to that in which they are found in nature. The truth of these remarks is borne out by the fact, that although numerous and extensive collections of terrestrial plants are to be found in many parts of Great Britain, yet nowhere are aquatic plants cultivated to the same extent, and with equal success. In the genus in question, we have a striking illustration of this truth; for, although all the species possess foliage of peculiar beauty, yet when removed from their natural habitations, some of them defy the skill of the cultivator to preserve them alive for any length of time. Whilst, however, a few of the genus are impatient of cultivation, others are of remarkably robust growth; and it is stated by Haller, that in the lakes of Switzerland, the stems of *P. serratum* extend to twenty fathoms in length, and form, as it were, immense woods in the midst of these vast reservoirs. The leaves and seeds of *P. crispum* afford an agreeable food for ducks, and the roots of *P. natans* are eaten by swans and other large aquatic birds; whilst the leaves of all afford shelter, shade, and spawning places for fish, as well as harbour for insects, from which both birds and fish derive a great portion of their food.

GENUS XX. RUPPIA. LINN. *Ruppia*.

Nat. Ord. FLUVIALES.

GEN. CHAR. *Flowers* two, from the base of the leaves. *Calyx* and *corolla* none. *Seeds* four, convex on one side, slightly keeled on the other, and elevated on a short peduncle. Named in honour of H. Bernard Ruppia, a botanical author.

Ruppia differs from *Potamogeton* in being entirely destitute of calyx, and also in having stalked seeds.

1. *R. maritima*, Linn. (Fig. 281.) *Sea Ruppia*.

English Botany, t. 136.—English Flora, vol. i. p. 238.—Lindley, Synopsis, p. 251.—Hooker, British Flora, vol. i. p. 79.

Roots fibrous, growing in tufts from the lower joints of the slender, flexuose, branched, leafy stem. *Leaves* alternate, linear, narrow, channelled, more or less acute, and clasping the stem at the base, forming a sheath more or less dilated. *Spikes* about two-flowered, one below the other, on short, solitary, axillary stalks. *Anthers* sessile, large, one-celled, and bursting horizontally; during the time of flowering, the



276. *Potamogeton heterophyllus*.



277. *Potamogeton lanceolatus*, var. β .



278. *Potamogeton lanceolatus*.



279. *Potamogeton rufescens*.



280. *Potamogeton natans*.



281. *Ruppia maritima*.

spadix lengthens to the height of six or more inches, becoming spirally twisted, by means of which the blossoms rise to the surface of the water. As the germens become enlarged, their base is extended, and becomes an elongated footstalk of several inches in length. The fruit is oblique, acuminate, with a beak, often varying greatly in length. "This *drupe* is sometimes more beaked than at other times, and the sheaths of the leaves are sometimes but little dilated: then the plant becomes *R. rostellata* of Koch, and Reichenbach in his *Iconog.* t. 174, f. 306, which indeed is the more common state of the plant with us. I have only seen such large sheaths as are figured for the true *R. maritima*, Linn. (Reichenb. *Iconog.* t. 174, f. 307,) on specimens from the south of Europe. Yet the latter authority quotes my figures in *Flora Lond.* as admirably characteristic of his *maritima*." (Hooker.)

Habitat.—Salt-water ditches.

Perennial; flowering in July and August.

As the body, by habit and continued exercise, becomes enabled to support particular conditions in life without inconvenience, in like manner does the mind, by the frequent recurrence of the same object, become insensible, and even truths of the most striking kind pass before it without producing the least impression. We are led to make these remarks from observing the importance which botanists attach to the peculiar structure of the flower-stem of the above species (*R. maritima*), which we have already said is twisted in a spiral form, and this is particularly observable about the time the flower makes its first appearance above the surface of the water; but this is only one of the many instances that might be adduced to show the harmony and design displayed throughout the whole of the works of the Great Architect of Nature. There is, in fact, nothing more wonderful in the spiral-formed flower-stem of this plant, than in that of the flower-stem of the common Water Lily (*Nymphæa alba*), and numberless others that might be mentioned. At the season of flowering, the Water Lily raises its unexpanded flower upon a small cylindrical stem, and whether the water be six inches or six feet deep, this stem is invariably proportioned to the exact depth of the water, and ceases to elongate the moment the blossom reaches the surface. Here, then, is enough to excite the admiration of the contemplative mind. It is true the external structure of the flower-stem is more simple than that of *Ruppia maritima*, yet it is not the less adapted to the end for which it is designed. That we cannot account for all the phenomena in nature, is no proof whatever that vegetables, when found in their natural situations, possess one appendage unnecessary to their condition, or one that could be added to render them more complete. We have seen that the simple stem of the *Nymphæa* is in every way fitted for the office it has to perform; and although some might be disposed to ascribe the peculiarly twisted stem of the *Ruppia* to a mere freak of Nature, we shall also see that this singular structure is indispensable to the plant when in a state of

nature. Its natural habitation, as has already been stated, is that of salt-water ditches, under the influence of the ebbing and flowing of the tides : there is, therefore, in this spiral stem the most admirable proof of design ; for by this beautiful contrivance it relaxes or contracts according as the tides ebb and flow, by which means the flower is enabled to support itself above the surface of the water, until its season of flowering be past, when it again descends within its watery element.

Here may be added with propriety the exquisitely beautiful lines of Sir Richard Blackmore :

Your contemplation farther yet pursue ;
 The wondrous world of vegetables view !
 Observe the forest oak, the mountain pine,
 The towering cedar, and the humble vine,
 The bending willow, that o'ershades the flood,
 And each spontaneous offspring of the wood !
 The oak and pine, which high from earth arise,
 And wave their lofty heads amidst the skies,
 Their parent earth in like proportion wound,
 And through crude metals penetrate the ground ;
 Their strong and ample roots descend so deep,
 That fixed and firm, they may their station keep,
 And the fierce shocks of furious winds defy,
 With all the outrage of inclement sky.
 But the base brier, and noble vine,
 Their arms around their stronger neighbour twine.
 The creeping ivy, to prevent its fall,
 Clings with its fibrous grapples to the wall.
 Thus are the trees of every kind secure,
 Or by their own, or by a borrowed power.
 But every tree from all its branching roots
 Amidst the glebe, small hollow fibres shoots,
 Which drink with thirsty mouths the vital juice,
 And to the limbs and leaves their food diffuse :
 Peculiar pores peculiar juice receive,
 To this deny, to that admittance give.
 —Hence various trees their various fruits produce,
 Some for delightful taste, and some for use.
 Hence sprouting plants enrich the plain and wood,
 For physic some, and some designed for food.
 Hence fragrant flowers, with different colours dyed,
 On smiling meads unfold their gaudy pride.
 —Review these numerous scenes, at once survey
 Nature's extended face, then, sceptics, say,
 In this wide field of wonders can you find
 No art discovered, and no end design'd ?

GENUS XXI. SAGINA, LINN. *Pearl-wort.*

Nat. Ord. CARYOPHYLLÆ.

GEN. CHAR. *Calyx* inferior, of four permanent leaves. *Petals* four, shorter than the calyx, sometimes absent. *Capsule* of one cell and four equal valves. *Seeds* numerous, each attached to the receptacle by its own stalk. Insignificant weeds, with axillary white and greenish flowers. So named, as we are informed by Linnæus, on account of its nourishing qualities.

1. *S. procumbens*, Linn. (Fig. 282,) *Procumbent Pearl-wort.* Stems procumbent, smooth, leaves pointed. Petals shorter than the calyx. English Bot. t. 880.—English Flora, vol. 1, p. 239.—Hooker, British Flora, vol. i., p. 79.—Lindley's Synopsis of the British Flora, p. 49.

Stems and every part of the plant glabrous, spreading, and often covering three to four inches in thick concealed tufts, with the stems rooting at the joints, and often remaining evergreen throughout the winter. "In alpine situations growing amongst *Spergula subulata*, from which it is with difficulty distinguished." (Hooker.) *Leaves* linear, subulate, membranous, united at the base, and about half an inch in length; rather obtuse, but terminated by a minute bristle. *Peduncles* axillary, solitary, longer than the leaves. *Flowers* drooping at first, with whitish petals.

"The late Rev. H. Davies gathered, on a green near Beaumaris, in July, 1817, a very pretty variety, with rose-like double flowers, of from twenty-seven to thirty petals. This has found its way into some curious gardens."—Smith:

Habitat.—Damp gravel walks, sandy soils, and moist places; frequent.

Perennial; flowering May and June.

2. *S. apetalata*, Linn. (Fig. 283,) *Annual Small-flowered Pearl-wort.* Leaves fringed, bristle-pointed, slightly hairy. Petals much smaller than the calyx.

English Bot. t. 881.—English Flora, vol. i., p. 240.—Lindley's Synopsis, p. 49.

Root fibrous. *Stems* upright or ascending, but not rooting when in contact with the ground; generally more or less covered with rough, scattered hairs. *Leaves* resembling the preceding, but fringed at the edges, more glaucous, rarely glabrous, and terminated by a distinct bristle. *Peduncles* long, slender, and hairy. *Petals* white, entire or notched, sometimes absent. *Capsule* twice the length of the calyx.

Habitat.—Barren ground, walls, and waste places; common.

Annual; May and June.

3. *S. maritima*, Don. (Fig. 284,) *Sea Pearl-wort.* Stems erect or procumbent near the base, divaricated, smooth, leaves obtuse, fleshy, Petals absent.

English Bot. t. 2195.—English Flora, vol. i., p. 240.—Lindley's Synopsis, p. 49.—Hooker, British Flora, vol. i., p. 80.

Root tapering, fibrous below. *Stem* at the base creeping, ascending at the extremity; about four inches high; leafy, round, smooth, and branched; green or purplish. *Leaves* shorter than the last, obtuse, sometimes terminated by a minute point, and rounded on the back. *Peduncles* smooth, about an inch long, erect and slender. *Calyx* leaves membranous at the edge, ovate or obtuse. *Petals* entirely wanting.

"Mr. Don found sometimes eight stamens. Professor Hooker says the petals are entirely wanting, nor can I find any. The edges of the calyx are occasionally violet-coloured."—*Smith*.

GENUS XXII. MCENCHIA, HOOKER, *Manchia*.

GEN. CHAR. *Calyx* inferior, of four permanent equal leaves. *Petals*, four, shorter than the calyx. *Capsule* slightly ovate, the length of the calyx, of one cell, opening at the summit, with eight to ten minute teeth. *Seeds*, many, attached to the receptacle. Named in compliment to Conrad Mönch, Professor of Botany at Hesse Cassel.

Herbaceous, small, smooth herbs, having the habit of *cerastium*.

1. *M. erecta*, Smith, (Fig. 285,) *Upright Manchia*.

English Bot. t. 509.—English Flora, vol. i., p. 241.—Hooker, British Flora, vol. i., p. 80.—Lindley's Synopsis, p. 49.

A small, erect, smooth, glaucous herb, rising to the height of from two to four inches. *Leaves* opposite, lanceolate, sessile, entire. *Calyx* leaves large, white, membranous at the margin. *Petals*, length of the calyx, white, and shining.

This is the *Sagina erecta* of Linnæus, and of Smith, in *English Botany*, t. 609; and the latter author, in the *English Flora*, has the following remarks:—"An elegant little plant, certainly misplaced in *Sagina*, as its habit and the structure of its capsules evince. The uncertainty of its genus is hinted at in *Fl. Brit.* and *English Bot.*, though I had not then seen Ehrhart's work, to consider his characters. The original specific name *erecta* ought not to be changed: we may be thankful to get rid of *Quaternella*."

GENUS XXIII. TILLÆA, LINN. *Tillæa*.

Calyx, three to four deeply spreading, ovate segments. *Capsules*, three to four, two-seeded, oblong, recurved, bursting lengthways, two-celled and two-valved. Named in compliment to Michael Angelo Tilli, an Italian Botanist, and author of a Catalogue of Plants grown in the Medical Garden at Pisa, 1723.

1. *T. muscosa*, Linn. (Fig. 286,) *Mossy Tillæa*. *Stems* procumbent, branched. *Flowers* axillary, sessile, three-cleft.

English Botany, t. 116.—English Flora, vol. i., p. 242.—Lindley's Synopsis, p. 63.—Hooker, British Flora, p. 80.

Roots fibrous. *Stems* round, leafy, about two inches long, at first



282.

Sagina procumbens.



283.

Sagina apetala.



284.

Sagina maritima.



285.

Monchia erecta.



286.

Tillaea muscosa.



287.

Radiola millegrana.

erect, but soon becoming numerous and decumbent. *Leaves opposite*, combined at the base, oval, obtuse, smooth, succulent, and of a reddish colour. *Flowers axillary*. *Peduncles* often accompanied by a pair of smaller leaves. *Calyx*, leaves three, pointed. *Petals* narrow, pointed, white or tinged with red.

This minute and depressed plant becomes conspicuous only in ample reddish patches, which it presents to the eye, throughout the sandy wastes where it delights to grow. The whole plant is smooth. "The flowers are naturally three-cleft, and of course triandrous, but they are sometimes four-cleft in strong plants, and Gærtener says five-cleft. Still the want of *nectararies* keeps them generally distinct from the chiefly African genus *Crassula*."

Habitat.—Common in Norfolk and Suffolk.

Annual; May and June.

GENUS XXIV. RADIO'LA.—GMEL. *Flax-seed*.

Calyx of four leaves, united, half-way up dividing into four segments, each deeply three-cleft. *Petals* four, undivided. *Germin* superior, four-lobed. *Capsules* round, of eight cells, and eight valves. *Seeds* ovate, solitary, compressed, and polished. Named from *radius*, a ray, on account of the ray-like segments of the calyx.

1. *R. millegrana*, SIM, (Fig. 287.) *Thyme-leaved Flax-seed*.

English Bot. t. 890.—English Flora, vol. i. p. 243.—Hooker, British Flora, vol. i. p. 80.—*Radiola linoides* of Lindley, Synopsis, p. 54.

Root tapering, more or less fibrous. *Stem* one to two inches high, erect, frequently branched, rather spreading, and somewhat corymbose. *Leaves* opposite, sessile, distant, ovate, entire, smooth. *Flowers* solitary, axillary, terminal, stalked, and on short peduncles. *Calyx* apparently of one piece, numerous and distinctly toothed.

Habitat.—Wet, sandy places.

Annual; July, August.

CLASS V.
PENTANDRIA. 5 STAMENS.

ORDER I.
MONOGYNIA. 1 PISTIL.

GENUS I. E'CHIUM.—LINN. *Viper's Bugloss.*

Natural Order. BORAGIN'Æ. DE CAND.

GENERIC CHARACTER. *Corolla* irregular, with a short tube, the limb campanulate, obliquely five-lobed, the two upper largest, the lower acute and reflexed. *Stigma* deeply cloven. *Nuts* covered with little tubercles. Name *εχis*, a *viper*; so called because it was said that it and some allied plants would heal a wound made by the sting or bite of a viper.

1. *E. vulga're*, Linn. (Fig. 288.) *common Viper's Bugloss.* Bristly and warty, stem simple, herbaceous, leaves lanceolate, flowers in short lateral spikes, tube of the corolla shorter than the calyx. Stamens longer than the corolla.

English Botany, t. 181.—English Flora, vol. i. p. 269.—Hooker, British Flora, vol. i. p. 98.—Lindley, Synopsis, p. 163.

Root long tapering. *Stem* from one to three feet high, round, erect, simple, hairy, (as is the whole plant), and rough, with pale rigid bristles arising from a tuberculated base. *Leaves* lanceolate, single ribbed, the lower ones with footstalks spreading, the upper narrower and sessile, of a dull green. *Inflorescence* terminating the stem in a long compound spike. *Spikelets* arising from the axis of the upper leaves, crowded, recurved. *Flowers* unilateral, sessile, from the axis of a narrow bractea. *Calyx* of five linear segments, mostly of unequal lengths. *Corolla* bell-shaped, downy, its tube shorter than the calyx, the segments acute. *Stamens* longer than the corolla, frequently of variable lengths, and one is often not longer than the corolla. *Anthers* oval. *Pistil* longer than the stamens. *Style* hairy. *Stigma* deeply cloven, spreading. *Nuts* four, spreading, rough, with tubercles.

Habitat.—Old walls, road sides, and waste places frequent, especially in a light, sandy, or gravelly soil.

Biennial; flowering from June to August.

Of whatever use this plant may have been formerly, it is now entirely neglected; but, as an ornament to the road sides and fields, perhaps none of our native plants surpass it, either in the beauty or duration of their flowers. Its rows of rosy buds, as they expand, contrast admira-

bly with the fine blue or varied purple of the full expanded blossoms, densely crowded into a long terminating spike: it would be a much greater ornament to the flower border than numerous other plants that are cultivated with much care and great trouble.

The rigid hairs with which the whole plant is covered, are deserving the student's minute examination, those of the stem arising from a dark rounded callous tubercle, while those upon the leaves are from the centre of a flattish circular scale, of a vitreous appearance, delicately striated with lines radiating from the centre, and having a minutely crenated margin.

Varieties are occasionally met with, having the corolla white, and sometimes rose colour; the length also of the corolla, as well as the stamens, is various, and frequently the whole appearance of the plant is much altered as it advances to maturity, by the elongation of the spikelets, which are sometimes lengthened into leaf branches six or eight inches long, and the segments of the calyx, as the seeds ripen, are elongated.

We have several times found luxuriant plants growing in a warm situation, near Worksop, Nottinghamshire, having much the character of *E. pustulatum*, which is distinguished by being rougher, the tubercles larger, the tube of the corolla as long again, the stamens inserted higher in the tube, and more spreading. It is not of unfrequent occurrence on the continent, and it is not improbable that it may be found in England. In the northern parts of Portugal I have found it very abundant, together with *E. violaceum*, a species readily distinguished from either of the above, and introduced into the British Flora, from having been found at Jersey. We can scarcely admit its claims to this rank, but its character may be a guide to the student *E. violaceum*.—*Linn.* Stem herbaceous, branched, hispid, leaves ovate, lanceolate, the lower petiolated, the upper oblong, cordate, and somewhat amplexicaul at the base, spikes simple elongated, stamens as long as the corolla.

Habitat.—"Plentiful on the sandy grounds about St. Hilary, Jersey.—*Kay*. Since found in the same spot by Captain Finlay, and by Mr. Trevelyan."—*Hooker*.

Annual or biennial; flowering in August. The spikes are lax, few flowered, of a beautiful violet-blue colour.

GENUS II. PULMO'NARIA.—*Linn.* *Lungwort*.

Nat. Ord. BORAGINÆ. DE CAND.

GEN. CHAR. *Calyx* bell-shaped, with five angles, five cleft. *Corolla* funnel-shaped, five-lobed. *Stigma* obtuse.—Name from *Pulmo*, the lungs, from its supposed virtue in affections of the lungs.

1. *P. officinalis*, Linn. (Fig. 289), common Lungwort. Lower leaves ovate cordate on footstalks, the upper ovate sessile.

English Botany, t. 118, (excluding the root leaves which belong to the next species.)—English Flora, vol. i. p. 262.—Hooker, British Flora, vol. i. p. 99.—Lindley, Synopsis, p. 164.

Root fibrous. *Stem* eight to twelve inches high, angular, hairy, mixed with rigid bristles, having a tuberculated base. *Root leaves*, and those on the lower part of the stem ovate or ovato heart-shaped, on broad foot-stalks, the upper ones ovate, or ovate lanceolate, sessile, all hairy, and more or less hispid, the under side pale green, the upper frequently marked with pale green spots. *Flowers* in small terminal corymbs. *Calyx* campanulate, with five lanceolate segments, five angles, and mostly five alternate ribs, hairy, or hispid. *Corolla* funnel-shaped, the tube about the length of the calyx, somewhat hairy at the top, the limb blue or purple, of fine rounded lobes. *Stamens* about the middle of the tube, sessile, or on very short filaments. *Style* as long as the tube. *Stigma* obtuse, emarginate. *Nuts* four, free.

Habitat.—Woods and Groves, rare; Durham, Bedfordshire, Hampshire, Arniston woods near Edinburgh, and in waste places about Glasgow.

Perennial; flowering in May.

This plant, which is common in gardens, and is much more frequently found indigenous on the continent than with us, was formerly highly esteemed in the cure of affections of the chest, and was known by the name of *Jerusalem cowslip*, *Jerusalem sage*, *Pulmonaria maculata*; but what virtues it may possess is probably owing to the small quantity of nitre which it contains, in combination with a slight degree of astringency and mucilaginous taste; it is now, however, entirely fallen into disuse. In the north of Europe it is used as a pot herb, and, according to Ray, it was brought to table in Scotland in his time. The flowers of this genus are as in the last pink, changing, as they expand, to purple and blue.

2. *P. angustifolia*, Linn. (Fig. 290.) narrow-leaved Lungwort. Leaves rough lanceolate, the lower on foot-stalks, the upper sessile.

British Botany, t. 1628.—English Flora, vol. i. p. 262.—Hooker, British Flora, vol. i. p. 99.—Lindley, Synopsis, p. 164.

Root small fibrous. *Stem* from one and a half to two feet high, rough, with hairs, simple or branched at the base, lower leaves elliptical lanceolate, on long tapering foot stalks, the upper lanceolate, sessile, sometimes decurrent, rough, with hairs and bristles, arising from a callous tuberculated base, seldom spotted as in the above species. *Flowers* in terminal racemes, on short declining foot-stalks. *Calyx* broadly bell-shaped, with five deep lanceolate segments, scarcely angulated or ribbed, hairy, becoming much larger after



288 *Echium* vulgare.



289 *Pulmonaria officinalis*



290 *Pulmonaria angustifolia*.



291 *Lithospermum officinale*.



292 *Lithospermum arvense*.



293 *Lithospermum purpureo-caeruleum*.

flowering. *Corolla* scarcely the length of the calyx, ribbed, the limb of five rounded lobes, within the throat of the tube is a circle of fine hairs. *Nuts* four, large, spreading, tuberculated, and downy.

Habitat.—Woods and thickets, rare; Isle of Wight, Hampshire, and in Flintshire, Scotland.

Perennial; flowering in May and June.

The leaves of this species vary from linear-lanceolate to ovate-lanceolate, which characters were deemed by some of the continental Botanists, sufficient to make them into distinct species, as *P. oblongata* Schrad, *P. media* Reicheub. This plant was supposed to contain the same medicinal properties as the above, but like it, is now out of use.

GENUS III. LITHOSPERMUM.—LINN. *Gromwell.*

Nat. Ord. BORAGIN'ÆÆ. DE CAND.

GEN. CHAR. *Calyx* in five deep segments. *Corolla* funnel-shaped, five-lobed. *Stigma* obtuse bifid. *Nuts* smooth and shining, or wrinkled.—Name from *λίθος*, a stone; and *σπέρμα*, a seed; from the hardness of the seeds or nuts.

1. *L. officinale*, Linn. (Fig. 291.) common *Gromwell*, *Grey Mill* or *Grey Millet*. Stem erect, very much branched, leaves lanceolate, acute, ribbed, very rough above, hairy beneath, nuts smooth and shining.

English Botany, t. 134.—English Flora, vol. i. p. 256.—Hooker, British Flora, vol. i. p. 99.—Lindley, Synopsis, p. 164.

Root tapering. The whole plant rough, with close pressed hairs pointing upwards. *Stem* from one to two feet high, or more, round, striated, very much branched, especially in the upper part, leafy; the *leaves* lanceolate, or ovate-lanceolate, with a strong mid-rib, and several lateral ones, pale green, and hairy beneath, above rough, with short rigid bristles arising from a flat callous tuberculated base. *Inflorescence* a recurved leafy spike. *Flowers* from the axis of the leaves, on short stalks. *Calyx* in five deep lanceolate acute segments, mostly equal, very hairy. *Corolla* small, pale buff colour, funnel-shaped, the tube mostly rather longer than the segments of the calyx, the limb hairy externally, of five-lobed spreading obtuse segments, each having at its base a small hairy protuberance. *Stamens* about the middle of the tube. *Anthers* oblong, on short filaments. *Pistil* shorter than the corolla. *Stigma* obtuse bifid. *Fruit* four, spreading obovate. *Nuts* brownish white, highly polished, very hard, and brittle, seldom more than one or two ripening on each calyx.

Habitat.—Dry, waste, uncultivated places; frequent in England and Ireland, but rare in Scotland.

Perennial; flowering in May and June.

The hardness of the pericarps in this genus is very remarkable, much resembling both in brittleness and lustre globules of porcelain, and upon examination are found to contain a greater portion of earthy matter than any other organised substance. According to Captain Le Hunte, as given in Hooker's British Flora, he found "the stony shells of sixty seeds weighed upwards of seven grains. Heated to redness these seven were reduced to three, of which four-tenths of a grain were pure *silica*. There was also a considerable quantity of phosphate of lime and iron." It was from the circumstance of the stony hardness of the nuts that the ancients esteemed this plant as a cure for stone and gravelly diseases; and it is still used as a diuretic and solvent by the country dames, in their infusions and diet drinks; but whatever relief may be obtained by its use is doubtless from the quantity of fluid which is taken, and not from any beneficial lithontriptic properties which it possesses.

2. *L. arven'se*, Linn. (Fig. 292.) *Corn Gromwell*, or *Bastard Alkanet*. Stem erect, branched, leaves lanceolate, acute, hairy, the lower petiolated and obtuse, nuts rough and wrinkled.

English Botany, t. 123.—English Flora, vol. i. p. 256.—Hooker, British Flora, vol. i. p. 99.—Lindley, Synopsis, p. 164.

Root small, tapering, its bark a deep red. The whole plant thickly covered with close pressed hairs, arising from callous tubercles. *Stem* round, or striated, from one to two feet high, or higher, branched above, seldom below. *Leaves* alternate, lanceolate, acute, single ribbed, very hairy, each hair swollen or tuberculated at the base, the lower leaves oblong, lanceolate, obtuse on foot-stalks, the upper lanceolate, acute, sessile. *Inflorescence* a terminal raceme at first compact incurved, becoming much elongated. *Flowers* from the axis of the leaves, on short stalks. *Calyx* of five narrow segments, becoming much larger when in fruit, and spreading. *Corolla* white, funnel-shaped, the tube rather longer than the calyx, hairy, the limb of five obtuse lobes, each having at its base a small hairy protuberance. *Stamens* about the middle of the tube. *Stigma* bifid. *Fruit* four, spreading obovate. *Nuts* shining, pitted, and wrinkled.

Habitat.—Corn fields and waste places; frequent.

Annual; flowering in May and June.

The flower is very small, mostly white, or light buff. A variety is said to have been found with blue flowers, as well here as the continent, where the species is equally common as with us.

3. *L. purpureo-cæruleum*, Linn. (Fig. 293.) *Creeping or Purple Gromwell*. Stems erect, scarcely branched. The barren ones prostrate, leaves lanceolate, acute, corolla much longer than the calyx. *Nuts* smooth.

English Botany, t. 117.—English Flora, vol. i. p. 256.—Hooker, British Flora, vol. i. p. 99.—Lindley, Synopsis, p. 164.

Root woody, branched, and tufted. *Stems* several, round, rough, with spreading hairs, leafy, the barren stems simple, spreading on the surface of the ground, others erect, from one to one and a half feet high, divided into two or three branches at the extremity. *Leaves* numerous, alternate, lanceolate, acute, tapering at the base, sessile, single ribbed, paler beneath, rough, with close pressed hairs. *Inflorescence* terminal, leafy, erect, spikes. *Flowers* on short footstalks. *Calyx* of five linear segments. *Corolla* funnel-shaped, much larger than either of the above, hairy externally, its tube pink, longer than the calyx, the limb fine purplish blue, spreading, of five obtuse lobes, each having at its base a pink swelling, slightly downy. *Stamens* about the mouth of the tube. *Anthers* oval, on short filaments. *Pistil* as long as the tube. *Stigma* bifid. *Fruit* about four, ovate, hard, white polished. *Nuts* mostly a little rugged.

Habitat.—Thickets, in a chalky soil; rare; North Side of Denbigh, in Wales; near Taunton, Somersetshire; Mary Church, Devonshire; Darenthwood and Greenhithe, Kent; Carsewell Bay, Glamorganshire.

Perennial; flowering in June and July.

This is the most beautiful species of the genus, readily distinguished by its flowers, which are larger than the above, at first of a beautiful rose colour, becoming a fine purplish blue, and sometimes purple. It is of frequent occurrence on the continent, more especially in Portugal, Spain, and Italy, where few flowers surpass it in the richness of their colour.

4. *L. maritimum*, Lehm. (Fig. 294.) *Sea-side Gromwell*. Glaucous, stems procumbent branched, leaves ovate, on broad footstalks, rough, with callous points, fleshy. *Nuts* smooth.

English Botany, t. 36S.—*Pulmonaria maritima*.—English Flora, vol. i. p. 257.—Hooker, British Flora, vol. i. p. 99.—Lindley, Synopsis, p. 164.

Root tapering. Whole plant of a beautiful glaucous hue, which becomes black with drying. *Stems* several from the same root, much branched, and leafy, procumbent, and spreading from one to two feet long. *Leaves* alternate, ovate, or ovate-lanceolate, with a mid-rib, and frequently several lateral ones waved, the lower on broad footstalks, the upper nearly sessile, fleshy, of a beautiful pale glaucous hue, sprinkled over with minute callous points, white, becoming more apparent after drying; when examined by a lens they appear like glistening stars, radiating from a brilliant point in the centre, destitute of hairs, as indeed is the whole plant; thus widely differing from the above species. *Inflorescence* in loose terminal leafy racemes, often clustered at the extremity of the main stem. *Flowers* on rather long naked pedicels. *Calyx* in five broadly lanceolate segments, with a mid-rib. *Corolla*

small, not much longer than the calyx, the tube short, limb of five rounded segments, of a beautiful purplish blue, equal, erect. *Stamens* five, on short filaments from the mouth of the tube, alternating with small pale protuberances. *Stigma* obtuse bifid. *Fruit* four, smooth. *Nuts* obovate, pointed and keeled, large, not spreading, as in the above, but closely converging around the pistil attached to their base.

Habitat.—Sea-coast, amongst sand and loose stones; rare; in the North of England; Wales; in the North and West of Scotland plentiful; and between Balbriggan and Skerries; at the Murrow of Wicklow; near Dindrum, county of Down, Ireland.—*Flora Hibernica*.

Perennial; flowering from May to July.

This interesting plant appears to be known only in the northern countries, "extending to the Arctic regions." It is of a peculiar habit, spreading itself over the loose sand and stones within the influence of the saline atmosphere of the sea, out of which it does not appear as though it would flourish; and the pedestrian, in his rambles, placing one of the leaves in his mouth, may fancy he is in possession of an oyster, from the flavour which it imparts. The synonyms of this plant are very numerous, from the various opinions entertained by Botanists as to its genus.

GENUS IV. SYMPHYTUM.—LINN. *Comfrey*.

Nat. Ord. BORAGINÆÆ. DE CAND.

GEN. CHAR. *Calyx* five-cleft. *Corolla* cylindrical, swollen upwards, limb with five short round lobes, its orifice closed with subulate connivant scales.—Named from *συνφύω*, to unite; so called because it was supposed to close and unite the edges of wounds.

1. *S. officinale*, Linn. (Fig. 293.) common *Comfrey*. Stem branched winged above, leaves ovate lanceolate, decurrent, the lower on footstalks, the upper sessile.

English Botany, t. 817.—English Flora, vol. i. p. 264.—Hooker, British Flora, vol. i. p. 100.—Lindley, Synopsis, p. 164.

Root tapering, branched, fleshy, externally black. *Stem* from one to three feet high, succulent, branched, especially above, much winged from the base of the decurrent leaves, clothed with hairs, mostly pointing downwards. *Leaves* numerous, the lower and radical ones ovate, lanceolate, on footstalks, the upper and floral ones lanceolate, sessile, all decurrent (especially above), more or less waved on the edges, and clothed with hairs, spreading or pointing downwards. *Inflorescence* terminating the branches, in pairs of incurved one-sided racemes. *Flowers* on short footstalks, very rough, and hairy; as is the *calyx* of five lanceolate erect segments. *Corolla* cylindrical, its tube longer

than the calyx, the limb swollen, somewhat bell-shaped, terminating in five obtuse short segments, the orifice closed by five subulate *valves*, with glandulous margins, which unite together in the form of a cone over the mouth of the tube, and nearly as long as the limb; alternate with these valves arise the *stamens* on broad short *filaments*, bearing *Anthers* twice as long, but nearly concealed by the valves. *Pistil* with a *style* protruding beyond the corolla, bearing a slightly swollen stigma. *Fruit* four, ovate tumid. *Nuts* attached by an excavated base to the enlarged calyx.

Habitat.—Banks of rivers, and wet places; frequent.

Perennial; flowering in May and June.

Varieties of this species are found with white, rose, and violet or purple coloured flowers, the calyx spreading, and the style of various lengths. The corolla purple and calyx spreading is the *S. patens*, of Sibthorp. The corolla white and style exserted is the *S. bohemicum*.—Schm. boh. n. 212. The purple flowered plants are mostly smaller than the others, much more hairy, and of a darker green.

The roots abound with a viscid juice, and are used when Althea (Marshmallow) roots cannot be obtained, in coughs and colds, and as a demulcent. It forms a part of almost all the collections of medicinal plants, cultivated in the gardens of rural districts; and the leaves, boiled slowly with lard and a portion of bees wax, compose the famed healing ointment of the village doctress for wounds and ulcers; the belief is still entertained of its surpassing healing properties; it is needless to say how little of this faith it deserves.

2. *S. tuberosum*, (Fig. 296.) *tuberous-rooted Comfrey*. Stem simple or bifid at the top, leaves ovate, oblong, the lower on footstalks, the upper sessile, slightly decurrent.

English Botany, t. 1502.—English Flora, vol. i. p. 264.—Hooker, British Flora, vol. i. p. 100.—Lindley, Synopsis, p. 164.

Root oblique, fleshy, tuberous, and branched, externally white. *Stem* from one to two feet high, unbranched, except sometimes bifid at the top, simple, not winged, hairy, the hairs pointed downwards or spreading. *Leaves* very slightly decurrent, the lower on rather long footstalks, ovate, or ovate-lanceolate, the upper ovate, oblong, pointed, sessile, or on short footstalks, alternate, or in pairs, hairy, scarcely waved. *Inflorescence* similar to the above. The *Flowers* fewer, on longer pedicles. The *calyx* of longer lanceolate segments. *Corolla* yellowish white. *Nuts* excavated at the base.

Habitat.—Shady woods, and banks of rivers; frequent in Scotland, particularly the lowlands; rare in England, Durham.—Mr. Robson. On the banks of the river Don, below Attercliffe, Yorkshire.—R. D.

Perennial; flowering in June and July.

The habit of this plant is similar to the last, from which it will be

readily distinguished, and is, perhaps, more frequent than is at present known; it is also found in the mountainous districts of Germany, Italy, and France.

GENUS V. BORA'GO.—LINN. *Borage*.

Nat. Ord. BORAGIN'Æ. DE CAND.

GEN. CHAR. *Calyx* five cleft. *Corolla* wheel-shaped, the limb of five mostly spreading segments, the orifice of the tube closed with five obtuse emarginate *scales*.—Name from *cor*, the *heart*; and *ago*, to *affect*; formerly written *Corage*, because it was supposed to comfort the heart and spirits.

1. *B. officinalis*, Linn. (Fig. 297.) *common Borage*. The lower leaves obovate, tapering at the base, segments of the corolla ovate, acute, spreading, those of the calyx lanceolate.

English Botany, t. 36.—English Flora, vol. i. p. 263.—Hooker, British Flora, vol. i. p. 100. Lindley, Synopsis, p. 164.

Root tapering. The whole plant clothed with rough hairs, those of the stem pointed downwards. *Stem* from one to two feet high, round, succulent, mostly much branched. *Leaves* alternate, irregularly toothed or crenated; the lower obovate, obtuse, tapering at the base, on long footstalks, the upper becoming narrower, nearly lanceolate, sessile, or on short footstalks, winged at the base. *Inflorescence* racemose; large and numerous. *Flowers* on drooping peduncles, elongated by age. *Calyx* of five linear lanceolate segments, very hairy, spreading with the corolla until after flowering. *Corolla* wheel-shaped, the limb large, of five ovate acute brilliant blue spreading segments, the tube short, its orifice surrounded with five short obtuse notched valves, sometimes awl-shaped. *Stamens* five, on short dilated *filaments*. *Anthers* large, awl-shaped, notched, converging together with the scales in a cone-shaped manner over the mouth of the tube. *Pistil* as long as the stamens. *Stigma* obtuse. *Fruit* four, ovate. *Nuts* depressed at the base, rough or tuberculated, inclosed in the converging calyx.

Habitat.—Rubbish and waste places, not unfrequent. Supposed to be naturalised.

Biennial; flowering in June and July.

This, the type of the natural order Boragin'æ, is a highly ornamental plant, from the great abundance of beautiful flowers that it bears; it appears to have been considered of much greater value as a medicinal plant in former times than at present, and obtained a place in the ranks of pharmacopæial remedies as a refrigerant, and is, I believe, still used in some countries as a syrup in pleurisies and inflammatory fevers; but in this country its principal use appears to

have been an ingredient with some other herbs in wine, water, lemon, and sugar, forming the famed old English beverage, known by the name of *cool tankard*, though the old adage of

“*I Borage always bring courage*”—

would lead to a contrary belief; and old Gerard, quoting Dodonæus, says “Those of our times do use the floures in sallads, to exhilarate and make the minde glad. There be also many things made of them, used for the comfort of the *heart*, to drive away *sorrow*, and increase the joy of the minde.”

We are not told what was the composition of the “many things” of which these flowers formed a part; but surely there was something of a very different nature to the flowers, to produce the exhilarating effects that are here spoken of: for we do not now find that it possesses any such properties. The whole plant is viscid and mucilaginous, with an unpleasant odour, something like that of a cucumber.

GENUS VI. LYCOP'SIS.—LINN. *Bugloss*.

Nat. Ord. BORAGIN'Æ. DE CAND.

GEN. CHAR. *Calyx* five-cleft. *Corolla* funnel-shaped, the *limb* of five lobes, the *tube* curved, its orifice closed with five convex connivent *scales*.—Name from *λυκος*, a *wolf*; and *ὄψις*, a *face* or *aspect*; so called from its roughness, and being the colour of a wolf, or from the circumstance of the corolla having some fancied resemblance to a grinning mouth, or the head of a wolf.

1. *L. arven'sis*, Linn. (Fig. 298.) *small Bugloss*. Stem erect, branched, leaves lanceolate, repando-dentate, very hispid, the lower on footstalks, tube of the corolla curved in the middle.

English Botany, t. 938.—English Flora, vol. i. p. 268.—Hooker, British Flora, vol. i. p. 100.—Lindley, Synopsis, p. 165.

Root small, tapering. The whole plant very rough, with spreading hairs and bristles. *Stem* erect, branched, somewhat angular, from one to two feet high. *Leaves* numerous, alternate lanceolate, the lower ones tapering at the base into a footstalk of variable length, the upper sessile, embracing the stem, the margin irregularly waved and toothed, the bristles arise from the centre of a callous tubercle. *Inflorescence* a leafy raceme. *Flowers* on short peduncles. *Calyx* of five narrow lanceolate segments. *Corolla* funnel-shaped, its *limb* bright blue, spreading, of five somewhat irregular rounded spreading segments, the *tube* longer than the calyx, white, curved in the middle, its orifice closed with five white concave obtuse hairy *scales*. *Stamens* about the middle of the tube, *filaments* short. The *Anther* ovate. *Pistil* about half as long as the tube. *Stigma* obtuse notched. *Fruit* four, ovate.

Nuts enveloped in the enlarged calyx, hard wrinkled and dotted, excavated at the base, with an enlarged plicated margin.

Habitat.—Corn fields and waste places, especially in a sandy soil; frequent.

Annual; flowering in June and July.

This plant, equally common on the continent as with us, is nearly allied to the following genus, from which it is distinguished by the curvature of its tube. The flowers are very beautiful, the white hairy valves closing the mouth of the tube form a delicate contrast with the rich blue of the limb, and they entirely close up the organs of fructification from the entrance of insects, &c.

GENUS VII. ANCHUSA.—LINN. *Alkanet*.

Nat. Ord. BORAGINÆ. DE CAND.

GEN. CHAR. *Calyx* five-cleft. *Corolla* funnel-shaped, the limb of five lobes, the *tube* straight, its orifice closed with five convex connivent scales.—Name from *αγκυχα* *ab* *αγκω*, to *strangle*, *suffocate*; the ancients believing that this species of plants strangled or choked serpents; or, as others suppose, from its constringent properties; or, according to Hooker, “from *αγκυσα*, *paint*. The roots of one species, *A. tinctoria*, yield a red dye, which was used in former times to stain the face.”

1. *A. officinalis*, Linn. (Fig. 299.) *common Alkanet*. Leaves lanceolate, hispid, bractæas ovate lanceolate, segments of the calyx acute, racemes terminal crowded, unilateral.

English Botany, t. 662.—English Flora, vol. i. p. 259.—Hooker, British Flora, vol. i. p. 101.—Lindley, Synopsis, p. 165.

Root long, small, tapering, blackish. The whole plant rough, with deflexed bristles from a callous base; from one to two feet high, erect, slightly angular, somewhat branched, and paniculated above. *Leaves* lanceolate, or oblong lanceolate, the lower ones with footstalks, the upper sessile, and mostly very narrow. *Inflorescence* an incurved terminal raceme, generally in pairs. *Flowers* numerous, crowded, unilateral on short peduncles. *Calyx* of five acute segments, more or less deeply divided, the bristles upon it close pressed and pointed upwards, the *bractea* ovate or ovate-lanceolate. *Corolla* funnel-shaped, the *limb* of five spreading, rounded blue or purplish segments, the *tube* white or yellow, its orifice closed with five broad obtuse hairy scales. *Stamens* sessile at the top of the tube, alternating with the scales. *Anthers* lanceolate. *Pistil* as long as the tube. *Stigma* cloven. *Fruit* four, ovate, acute. *Nuts* dotted and wrinkled, the base excavated and surrounded with a swollen plicated margin.



204 *Lithospermum maritimum.*



205 *Symphytum officinale.*



206 *Symphytum tuberosum.*



207 *Berago officinalis*



208 *Lycopsis arvensis.*



209 *Anchusa officinalis.*



300

Anchusa sempervirens.



310

Myosotis palustris.



311

Myosotis repens.



312

Myosotis caespitosa.



313

Myosotis alpestris.



314

Myosotis silvatica.

Habitat.—Uncultivated stony places, rare; on the Links near Hartley pans, Northumberland.

Biennial or Perennial; flowering in June and July.

It is doubtful if either this or the following species are natives of this country; they are frequently cultivated in gardens for the beauty of their flowers. The above has had the reputation of being useful in similar cases as the *Borago*, but is now justly rejected. It is of frequent occurrence on the continent, and is sometimes mistaken for the *A. tinctoria*, the roots of which contain much colouring extract, of a deep red colour.

2. *A. semper-virens*, Linn. (Fig. 300.) *evergreen Alkanet*. Leaves ovate hispid, the lower ones on footstalks, flowers axillary, on long peduncles, accompanied by two small leaves.

English Botany, t. 45.—English Flora, vol. i. p. 259.—Hooker, British Flora, vol. i. p. 101.—Lindley, Synopsis, p. 165.

Root thick tapering, blackish. The whole plant rather hairy than hispid, deflexed on the *stem*, which is from one to two feet high, erect, angular branched. *Leaves* ovate acute, dark green, the lower on long footstalks, the upper sessile, from which arise the long naked peduncles, terminated by two ovate-lanceolate leafy *bracteas*, and two small crowded racemes, having a single flower in the axis of these devarications. *Flowers* on short stalks. *Calyx* very hispid, of five narrow segments. The *corolla* is "rather salver than funnel-shaped," its tube short and swollen, the *limb* of a brilliant light blue, in five deep rounded segments, each having at its base a white obtuse hairy *scale*, from which a white line runs nearly half way up each segment; intervening between the scales are the sessile, ovate. *Stamens* at the top of the tube, and inclosed together with the *pistil* within the tube by the connivent scales. *Fruit* four. *Nuts* similar to the last.

Habitat.—Waste stony places, among ruins and uncultivated places; not unfrequent in England, Ireland, and Scotland.

Perennial; flowering in May and June.

This plant is almost always in foliage, from which circumstance it has obtained the name of *sempervirens*. The structure of its beautiful corolla much resembles that of the genus *Myosotis*, and it seems to be the connecting link between the two genera.

GENUS VIII. MYOSOTIS.—LINN. *Scorpion-Grass*.

Nat. Ord. BORAGINÆ. DE CAND.

GEN. CHAR. *Calyx* five-cleft. *Corolla* salver-shaped, the limb of

five flat obtuse lobes, *tube* short, its orifice nearly closed with smooth rounded scales. *Nuts* smooth.—Name from *μύς*, *μύς*, a mouse; and *οὐς*, *ωτός*, an ear; from the supposed resemblance of the leaves to the ear of a mouse.

* *Hairs of the calyx straight, close pressed.*

1. *M. palustris*, With. (Fig. 310.) great Water Scorpion-grass, or Forget Me Not. Calyx five-cleft, when in fruit campanulate, open, shorter than the divergent pedicle, limb of the corolla flat, longer than the tube, pubescence of the stem spreading, or absent.

English Botany, t. 1773.—English Flora, vol. i. p. 250.—Hooker, British Flora, vol. i. p. 101.—Lindley, Synopsis, p. 165.—*Myosotis scorpioides*, *β. palustris*, Linn. Sp. Pl. vol. i. p. 188.

Root creeping. *Stem* from one to two feet high, succulent, round, or slightly angular, erect or reclining at the base, mostly branched, clothed more or less abundantly with soft spreading hairs, or sometimes it is quite smooth, on the upper part of the stem and stalks of the racemes close pressed. *Leaves* oblong lanceolate, the lower tapering at the base into a broad footstalk, obtuse, sometimes ovate or ovate-lanceolate, the upper narrower, longer, tapering towards the extremity, or acutely lanceolate, sessile, and frequently slightly decurrent, forming a slight angle some way down the stem, all with a rather strong mid-rib, and a more or less distinct marginal one running from the base, and uniting again at the extreme point, where it is mostly terminated with a hard point bristly, and scattered over equally on both sides more or less profusely with soft white depressed hairs pointing upwards, except on the margin and footstalks they are spreading. *Inflorescence* terminal, *racemes* single, or mostly in pairs, with a single flower from the axis of divarication; this, though general, is not constant; sometimes it is accompanied by a small lanceolate leaf. At first the racemes are rolled in and crowded, but as the flowers gradually expand, they become more distant from each other. *Flowers* numerous, arranged in two rows, alternate on pedicles, at first very short and erect; but after flowering elongate, becoming longer than the calyx, patent and curved downwards. *Calyx* bell-shaped, rounded at the base, scattered over with close pressed hairs, limb divided about one-third its depth into five broad acute segments, each having a distinct mid-rib, and two scarcely distinguished lateral ones uniting in a callous point like the leaves, open when in fruit. *Corolla*, when in bud, a delicate pink, *tube* short, yellow, its orifice nearly closed by five obtuse yellow scales, the *limb* of five rounded or slightly emarginated lobes, flat, a beautiful blue colour, with a white line from the base of each lobe. *Stamens* alternating with the scales at the orifice of the tube. *Pistil* about the length of the tube of the corolla. *Stigma* capitate. *Fruit* four. *Nuts* smooth, compressed before, obtuse behind, with a slight edge, the base obtuse, with a minute perforation.

Habitat.—The sides of ditches, rivers, and in damp places; frequent. Perennial; flowering during the summer months.

The flowers of this plant are amongst the largest of our species, of a brilliant blue, with a yellow eye, and white radiating lines around it. Nothing can be more ornamental to our rivers, banks, and ditches; its numerous clusters of flowers raising their curled heads from amidst the delicate green of their leaves, fail not to attract the attention of every rambler among the pastoral scenes where it grows, in all parts of Europe. We are told that it obtained its name of Forget Me Not, and is selected as the emblem of affection, from the circumstance that “Two lovers were walking by a river, (the Rhine, I believe,) when the lady seeing and wishing for a flower of the *Myosotis palustris*, the cavalier attempted to gather it for her, but in so doing, slipped into the river and was drowned, exclaiming as he sunk, ‘Vergils mich nicht’—‘Forget Me Not.’”

2. *M. re'pens*, Don. (Fig. 311.) *creeping Water Scorpion-grass*, Calyx deeply five-cleft, when in fruit mostly connivent, shorter than the divergent pedicle; limb of the corolla flat, longer than the tube, pubescence of the stem spreading.

English Botany, t. 2703.—Hooker, British Flora, vol. i. p. 101. under *M. palustris*.—Lindley, Synopsis, p. 326.

This is usually a smaller plant than the above, seldom more than a foot high, frequently not half that height, putting out runners from its base, which take root, and the individual plant is continued. The *racemes* are similar to *M. palustris*, except that the pedicles are longer, especially in their deflexed state, and from the base of the first, and often also from two or three above it, there is a small lanceolate leaf. These, however, are not constant. The *calyx* is more deeply divided, its segments narrower, not so open when in fruit, and the base more hairy than in *M. palustris*. The *corolla* is also generally smaller, more concave than flat, its lobes paler coloured, the hairiness of the stem is variable, but generally more abundant than in *M. palustris*.

Habitat.—Wet, boggy situations; Scotland.—*Mr. G. and D. Don*, Dr. Murray. Kent.—*Mr. D. Don*. Sussex.—*Mr. Borrer*. Yorkshire, (higher parts).—*Mr. Backhouse*. Glen Cree, Ireland.—*J. Bell*. Banks of the River Don, above Sheffield; and the Moors, Derbyshire.—*R. D.*

Annual; flowering, according to Mr. Backhouse, in Hooker's British Flora, two months earlier than *M. palustris*.

It is not without some hesitation that we have followed Mr. Don, in considering this more than as a variety of *M. palustris*. It is, however, probably as much deserving the distinction of a species, as some others that are considered so. I have gathered it from boggy places on the Cintra mountains, not more than six inches long; and about

Oporto and other parts of Portugal, not unfrequent. It is stated in English Botany to have been found at Madeira, and is described as a German plant.

3. *M. cæspitosa*, Schultz. (Fig. 312.) *tufted Water Scorpion-grass*. Calyx deeply five-cleft, when in fruit campanulate, open shorter than the divergent pedicles, limb of the corolla flat, equalling the tube, leaves linear, oblong, hairs of the stem close pressed.

English Flora, vol. i. p. 251.—Hooker, British Flora, vol. i. p. 102.—Lindley, Synopsis, p. 165.—Borrer in English Botany Suppl. t. 2661.

Root fibrous, not creeping, but tufts of fibres are frequently thrown out from the lower part of the stem. *Stems* mostly several from the same root, erect, or more or less curved at the base; from a few inches to two feet high, with axillary branches from the base upwards, which are generally much less leafy than the stem, generally scattered over with close pressed hairs, pointed upwards. *Leaves* pale green, linear, oblong, or ligulate, the lower obtuse, tapering at the base into a broad footstalk, the upper narrower, acute, sessile, sometimes slightly decurrent, hairs short, rigid, scattered freely over the upper side, very sparingly on the under, the mid-rib prominent, the marginal ones, one or two, scarcely elevated above the surface of the leaf, united at the extremity in a blunt point. *Racemes* mostly in pairs, with a solitary flower, sometimes accompanied with a small leaf from the axis of deva-rication. *Flowers* numerous, at first crowded, becoming more distant as the common stalk extends, the pedicles when in flower about the length of the calyx, erect, becoming three times as long, and, as the fruit advances to maturity, deflexed, the two or three lower flowers are sometimes accompanied with a lanceolate leaf, but this is far from being constant. *Calyx* bell-shaped, somewhat rounded at the base, and scattered over with pale close pressed hairs, the limb divided about half way into acute spreading segments, each with a prominent mid-rib and a delicate marginal one, united at the point. *Corolla* generally smaller than *M. palustris*, flat, or somewhat concave, the lobes rounded, rarely emarginate. *Style* shorter than the tube of the corolla. *Stigma* capitate, concave. *Fruit* four, spreading. *Nuts* oval, compressed in front with a sharp edge all round the base, with a slight depression, and perforated in the middle.

Habitat.—Watery drains, and side of slow streams, especially in a clayey or strong soil; frequent.

Annual or Biennial; flowering from May to July.

There is a great resemblance in this to *M. repens*. Its leaves are, however, longer, the hairs of the stem close pressed, the calyx less hairy, its segments more spreading when in fruit, and the corolla is smaller, and there are no runners by which it is propagated from its base.

**** Hairs at the base of the calyx spreading, and hooked at the extremity, those of the limb straight.**

4. *M. alpes'tris*, Schmidt. (Fig. 313.) *rock Scorpion-grass*. Calyx deeply five-cleft, when in fruit campanulate and open, shorter than the slightly spreading pedicles, a few hairs only at the base, curved, lower leaves on long narrow footstalks, limb of the corolla flat, longer than the tube.

English Flora, vol. i. p. 253.—Hooker, British Flora, vol. i. p. 102.—Lindley, Synopsis, p. 165.—*M. rupicola*—English Botany, t. 2559.

Root somewhat creeping. *Stems* several, from the same root, erect, or bent at the base, from four to six inches or more high, round, simple, or slightly striated, clothed with soft spreading hairs. *Leaves* numerous, hairy, the lower ovate, or ovate oblong, obtuse, on long narrow footstalks, the upper, lanceolate, acute, sessile, mid-rib strong, the lateral ones scarcely observable. *Racemes* terminal, in pairs, with a solitary flower, and very rarely a small leaf at the axis of devarication, at first in dense clusters of numerous large splendid blue *flowers*, on short stalks, which, however, elongate with the common stalk, and become longer than the calyx, and slightly spreading; the hairs of the common stalk and pedicles of the calyx very short and close pressed. *Calyx* large, for the size of the plant, of five lanceolate segments, more than half cleft to the base, clothed in soft straight silky hairs, especially towards their extremity, and with a few curved ones intermixed with those at the base, the segments straight, not closing over the fruit. *Corolla* large, as *M. palustris*, of a darker more brilliant blue, the limb flat, rounded, longer than the tube; the *style* as long as the tube of the corolla. *Stigma* capitate. *Fruit* four; smooth *nuts*.

Habitat.—Highland mountains, at a great elevation; but, observes Sir W. J. Hooker, "I am not sure that it is found except on the Bread-albine range; extending as far as Schechallion."

Perennial; flowering in July and August.

The splendid colour of the flowers of this plant, crowded at the extremity of their short stems, is extremely striking; and it is the collecting of these mountain gems in the lofty regions of their birth, that the true pleasure of possessing so great a prize gathered by ourselves is felt; indeed, the beauty of this *Myosotis* is justly appreciated only when seen blooming in its native place. It is found also on the mountain ranges of Germany, France, Switzerland, Italy, and others of the Continent, and is regarded by some Botanists as a variety of *M. sylvatica*.

5. *M. sylvatica*, Hoffm. (Fig. 314.) *upright Wood Scorpion-grass*. Calyx deeply five-cleft, with spreading hooked bristles at the base; when in fruit ovate, and closed, shorter than the divergent pedicles;

limb of the corolla flat, longer than the tube, lower leaves on long footstalks.

English Flora, vol. i. p. 252.—Hooker, British Flora, vol. i. p. 102.—English Botany, Suppt. t. 2630.—Lindley, Synopsis, p. 166.

Root somewhat creeping. *Stems* numerous from the same root, erect or bent at the base, from four inches to twelve or more high, simple or branched; the lower *leaves* ovate or obovate, obtuse, on long narrow footstalks, the upper lanceolate, sessile; the whole plant clothed with spreading soft hairs. *Racemes* in pairs, longer than in *M. alpestris*; the *pedicles* more spreading; the *calyx* with more numerous hooked hairs at its base; the *segments* narrower, less hairy, and the hairs straighter, and not so soft, the segments converging over the fruit, though not closely. The corolla is generally longer than in *M. alpestris*, but this is variable, and its colour is not so deep a blue. It seems an intermediate species between *M. alpestris* and *M. arvensis*, in which it partakes of some characters of each, but with so slight a difference in others, as to render it difficult to determine to which species it belongs.

Habitat.—Dry shady places, North of England; Lowlands of Scotland, frequent; Rokeby Park; Thorp Arch; and Moor Hall, near Sheffield, Yorkshire; Woods, Welbeck, and other places, Nottinghamshire; in Essex, Kent, and Norfolk.

Perennial; flowering in June and July.

We have no doubt this plant occurs more frequently than is supposed, being collected for *M. arvensis*, from which there is some difficulty in distinguishing it, since both vary greatly according to the situation of their growth. *M. sylvatica*, when grown on a poor dry soil, in an open situation, is much smaller than when grown otherwise, and is scarcely distinguishable from the following species; but *M. sylvatica* appears to be a perennial plant, and the *arvensis* is an annual.

6. *M. arvensis*, Hoffm. (Fig. 315.) *Field Scorpion-grass*. Calyx with half five-cleft spreading hooked bristles, when in fruit ovate, closed, shorter than the spreading pedicles, limb of the corolla concave, equalling the tube in length.

English Botany, Suppt. t. 2629.—Hooker, British Flora, vol. i. p. 103.—Lindley, Synopsis, p. 166.—*M. scorpioides*, a *arvensis*, Linn. Sp. Pl. p. 188.

Root fibrous, annual. *Stems* from a few inches to two feet high, mostly numerous from the same root, erect, or curved at the base, simple, or branched, roundish or angular, clothed more or less abundantly with spreading hairs. *Leaves* various, those from the root ovate or spatulate, on a somewhat dilated footstalk of variable length, upper ones sessile, lanceolate, tapering towards the base. *Racemes* mostly in pairs, often having one or two leaves at the base; when

single there is generally one flower distant from the rest, and frequently from the axis of a small leaf; the hairs of the common stalk, at least in the upper part, close pressed. *Flowers* numerous; *pedicles* spreading when in fruit, at length curved downwards. *Calyx* about half-cleft, less deeply than in *M. sylvatica*; its segments lanceolate, narrow, folding over the fruit more closely than in *M. sylvatica*, consequently more oval, and all the hairs, except a few towards the points of the segments, hooked; these straight hairs are, however, more numerous on some plants than others, but are not so numerous as in *M. sylvatica*. *Corolla* mostly small; *tube* the length of the calyx; the *limb* concave, as long as the tube. *Style* about the length of the tube. *Stigma* capitate. *Fruit* four, ovate, acute; two-edged black nuts.

Habitat.—Fields, uncultivated grounds, &c.; frequent.

Annual; flowering during the Summer months.

Few plants vary more in size than this. In the sandy fields of Nottinghamshire we have gathered it not more than three inches, and in rich land, amongst corn, one and two feet high; it varies also considerably in the size of its flowers, but which are pretty constant to the characters, as described above. The more constant marks of distinction are to be sought for in the calyx. We have some specimens also that are covered with soft spreading white hairs; while others are rough, from short hairs arising from callous tubercles.

7. *M. collina*, Hoffm. (Fig. 316.) *early Field Scorpion-grass*. Calyx with spreading hooked bristles, deeply five-cleft, open when in fruit, and as long as the spreading pedicles; limb of the corolla concave, shorter than the tube. Raceme usually with a distant flower at the base.

Borrer in English Botany, Suppt. after t. 2558.—Hooker, British Flora, vol. i. p. 103.—Lindley Synopsis, p. 166, *M. arvensis*.—English Botany, t. 2558.—t. 253.

Root annual, fibrous. Whole plant very hairy. *Stem* from four to eight and twelve inches high, usually several from the same root, erect or spreading, simple or branched, round, thick, clothed with spreading soft hairs. *Leaves* mostly numerous below the roots, and on short dilated footstalks, ovate, obtuse, the upper sessile, oblong, obtuse, or acute. *Racemes* long, very lax after flowering, the common stalk round, hairs close pressed, having a single flower distant from the others at its base, either alone or from the axis of the leaf. This distant flower is, however, not constantly present, especially in our continental specimens. *Flowers* numerous, very small. *Calyx* on an extremely short pedicle when in flower, but elongating to about its own length when in fruit, and spreading at length curved downwards; the limb cleft, into five narrow segments, clothed with hooked spreading bristles, except near their extremities; they are straight, and open,

not closed over the fruit. *Corolla* very small, concave, shorter than the tube, of five rounded lobes. *Fruit* four black smooth oval nuts.

Habitat.—Dry sandy places, wall tops, &c.; not very common.

Annual; flowering in April and May.

The size of the plant is very variable according to its habitat, particularly as to the greater or less supply of moisture it can obtain. It is, however, regular in the characters above given, and can only be mistaken for the following species, with which it has been identified by some Botanists, when it has grown very luxuriant.

8. *M. versicolor*, *Lhm.* (Fig. 317.) *yellow and blue Scorpion-grass*. Calyx with spreading hooked bristles, deeply five-cleft, closed when in fruit, and longer than the nearly erect pedicles; limb of the corolla concave, about half as long as the elongated tube.

English Botany, t. 2558, (not the fig.)—English Flora, vol. i. p. 254.—Hooker, British Flora, vol. i. p. 104.—Lindley, Synopsis, p. 166. *M. scorpioides*.—English Botany, t. 480, fig. 1.—*M. scorpioides*, γ . Linn. Sp. Pl. p. 189.

Root fibrous, annual. *Stem* very variable, in height from two to twenty inches, erect, or curved at the base, simple or branched, round, or slightly angular, rough, with spreading hairs, as is the whole plant. *Leaves* variable in number, sometimes very numerous, at others very scanty; the radical ones on broadish footstalks, ovate, obtuse, the upper sessile, long, narrow, obtuse, or acute, mostly thickly clothed with spreading hairs. *Racemes* very long, and lax after flowering; hairs much less numerous than on the stem, and close pressed. *Flowers* numerous, on short nearly erect pedicles, one or two of the lower ones, sometimes arising from the axis of a small leaf. *Calyx* large, longer than its pedicles, deeply divided into five narrow segments, closed when in fruit, clothed, except at the extremities where they are straight, with short rigid hooked bristles. *Corolla* with a tube, longer than the calyx, and twice as long as the limb, which is small, concave, when first expanded yellow, becoming blue, and often purple. *Fruit* four ovate black nuts.

Habitat.—Not uncommon in wet, as well as in dry places.

Annual; flowering from April to July.

The flowers commencing in their lower part amongst the leaves, we do not find uncommon in luxuriant specimens; in corn fields and other places, in Nottinghamshire and Yorkshire.

The whole of this genus of plants possess demulcent properties, and have been occasionally used as such in the form of tea, in cases of fever; they are not now thought of any value, but superseded by others. It was thought also that the leaves bruised and made into a poultice, were useful in removing inflammation of the eyes, as well as the decoction to bathe them; but this is also gone out of use, more potent remedies being substituted.



315

Myosotis arvensis



316

Myosotis collina



317

Myosotis visicolor



318

Asperugo procumbens



319

Cynoglossum officinale



320

Cynoglossum sylvaticum

GENUS IX. ASPERUGO.—LINN. *Madwort.*

Nat. Ord. BORAGINÆÆ. DE CAND.

GEN. CHAR. *Calyx* five-cleft, unequal with intermediate teeth. *Corolla* funnel-shaped, with a short tube; its orifice closed with convex connivant scales. *Nuts* four, compressed, covered by the folded compressed calyx.—Name from *asper*, rough.

1. *A. procumbens*, Linn. (Fig. 318.) *German Madwort.* Stem procumbent; flowers axillary.

English Botany, t. 661.—English Flora, vol. i. p. 266.—Hooker, British Flora, vol. i. p. 105.—Lindley, Synopsis, p. 165.

Root small. *Stem* spreading upon the surface of the ground, from one to two feet long, square, and rough, with short hooked prickles pointing downwards. *Leaves* mostly numerous, oblong, lanceolate, the margin rough, with prickles pointed forwards, and more or less hairy with close pressed hairs, sessile, or on short footstalks, single, or two, three, or four, arising from near the same point of the stem. *Flowers* small, single from the axis of the leaves, at first on short erect peduncles, which become longer, and curved downwards when in fruit. *Calyx* small, deeply divided into five teeth, with a small intermediate one, much enlarged when in fruit, veiny, compressed, and folded over the fruit. *Corolla* with a short cylindrical tube, its orifice closed by five obtuse convex valves; the limb longer than the tube, divided into five rounded blue segments. *Stamens* on short filaments, alternating with the valves, by which they are enclosed within the tube. *Style* as long as the tube. *Stigma* obtuse. *Fruit* four compressed roughish ovate nuts, attached laterally to the base of the persistent style, and without any perforation at the base.

Habitat.—Waste places, but rare; most frequent in the North of England and Scotland. "Boxley, Sussex; Wrangford, near Brandon." Durham; about Dunbar, Guillon Links, near Edinburgh, and Purfleet, Scotland.

Annual; flowering in June and July.

GENUS X. CYNOGLOSSUM.—LINN. *Hound's tongue.*

Nat. Ord. BORAGINÆÆ. DE CAND.

GEN. CHAR. *Calyx* five-cleft. *Corolla* funnel-shaped; the tube short, its orifice closed with five convex connivant scales. *Nuts* four, depressed, mucronated, attached to the base of the persistent style.—Name from *κύων*, a dog; and *γλῶσσα*, a tongue, from the shape and texture of the leaf.

1. *C. officinale*, Linn. (Fig. 319.) *common Hound's tongue*. Leaves lanceolate, downy; the upper ones subcordate at the base, sessile; the lower on footstalks; stamens shorter than the corolla.

English Botany, t. 921.—English Flora, vol. i. p. 261.—Hooker, British Flora, vol. i. p. 105.—Lindley, Synopsis, p. 166.

Root tapering. The whole plant very soft and downy, of a dull green, exhaling when rubbed a nauseous fœtid odour. The *stem* from one to two feet high or more, erect, round, striated, branched, and leafy; lower *leaves* oblong, lanceolate, tapering into a broad stout long footstalk, the upper narrower, the margin waved, dilated towards the base, where it is more or less cordate, embracing the stem; mid-rib strong, with several branched lateral ones. *Inflorescence* terminal, branched, spreading racemes. *Flowers* numerous, on short pedicles, which elongate after flowering. *Calyx* of five deep ovate acute segments, very downy, becoming much larger after flowering, reflexed as the fruit advances to maturity, and sometimes falls off, but mostly persistent. *Corolla* funnel-shaped, with a short wide cylindrical tube; its orifice closed by five obtuse convex *valves*; the *limb* of five rounded obtuse segments, of a dull red or purplish colour. *Stamens* on short filaments, alternating with the valves at the orifice of the tube. *Style* about the length of the tube, becoming much larger as the fruit advances, and forms an angular column, round which they are attached. *Fruit* four obovate flattish *nuts*, attached in the centre to the enlarged base of the style, very rough, with rigid (hollow when dry) conical points, having at the extremity a great number of minute spreading cartilaginous teeth, by which the nuts attach themselves to clothes, animals, &c.

Habitat.—Waste and rubbishy places; frequent in England and Ireland, less so in Scotland.

Perennial; flowering in June and July.

This plant is mucilaginous and narcotic, and was esteemed as an anti-spasmodic, having an extremely unpleasant odour, like that of mice. It is not now used in England, but is still retained amongst the list of preparations used by the Italian physicians; but with what advantage over the other more elegant remedies that we possess, having similar properties, we have yet to learn.

2. *C. sylvaticum*, Hænke. (Fig. 320.) *green leaved Hound's tongue*. Leaves lanceolate, shining, slightly hairy and roughish, especially beneath, the upper ones subcordate at the base, semi amplexicaul, sessile, the lower on footstalks; stamens shorter than the corolla.

English Botany, t. 1642.—English Flora, vol. i. p. 261.—Hooker, British Flora, vol. i. p. 105.—Lindley, Synopsis, p. 166.

Root tapering. The whole plant of a pale shining green, sparingly scattered over with hairs, having, unlike the last, little odour when

rubbed. The *stem* from one to two feet high, round, branched, somewhat striated, erect. *Leaves* mostly hairy beneath, and rough with tubercles, the lower ones on long footstalks, broadly lanceolate, the upper oblong lanceolate, sessile, broader at the base, and more or less embracing the stem; all have a strong mid-rib, and several small lateral branching veins. In other respects it is the same as the above, except that the flowers are mostly a duller purplish colour.

Habitat.—Road sides, and shady situations; rare. In Essex, Worcester, Kent, Surrey, Oxford, and near Norwich. Carse of Gowrie, in Scotland.—*Mr. G. Don*. Near Balbriggan, Ireland.—*Dr. Scott*.

Perennial; flowering in June and July.

GENUS XI. CYCLA'MEN.—LINN. *Cyclamen*.

Nat. Ord. PRIMULAC'ÆE. VENT.

GEN. CHAR. *Calyx* campanulate, five-cleft. *Corolla* with a campanulate tube, the limb of five reflexed segments. *Capsule* globose, opening with five teeth.—Name from κυκλος, a circle, "probably from the circles formed by the spiral peduncles," or from the shape of the leaves.

1. *C. hederæfolium*, Willd. (Fig. 321.) *Ivy leaved Cyclamen*, or *Sow-bread*. Leaves ovate, angular, and crenate, deeply cordate at the base, orifice of the tube of the corolla with ten teeth.

English Flora, vol. i. p. 274.—Hooker, British Flora, vol. i. p. 107.—Lindley, Synopsis, p. 183.—*Cyclamen Europæum*.—English Botany, t. 548.

Tubers large, globose, which put out branched fibrous roots. *Leaves* all radical, on long slender footstalks, ovate, or roundish oblong, angular, waved and crenated, deeply heart-shaped at the base, smooth, the upper side beautifully variegated with dark and pale glaucous green, with a central rib, and several smaller ones from the base, more prominent on the under side, and somewhat glandular, the surface of the leaf is somewhat paler than the upper, with a purplish tinge. *Flowers* single, drooping on a long slender scape, thinner and waved in the lower part, thicker in the middle, reaching above the leaves after flowering, and as the seed advances to maturity, the scape becomes twisted up in a spiral manner, and conveys them to the earth. *Corolla* white, or pinkish, purplish about the orifice of the tube, which is short, somewhat bell-shaped; the limb of five deep acute reflexed twisted segments, with two obscure teeth at the base of each. *Calyx* deeply divided in five ovate acute segments. *Stamens* within the tube,

on short *filaments*. *Style* as long as the stamens. *Stigma* obtuse. *Capsule* globose, opening with five teeth. *Seeds* numerous.

Habitat.—Groves and shady places, a doubtful native; Bramfield, Suffolk.—*D. E. Davy, Esq.* Sandhurst Green.—*Mr. Christy.* And Goudhurst, Kent.—*Mr. Borrer.*

Perennial; flowering in April.

The common name of *Sow-bread*, by which this plant is known, appears to have arisen from the circumstance of its tubers being much sought after by swine. In the Island of Sicily it forms a considerable portion of the food of the wild boars, although it possesses acrid and stimulating properties. It has been thought useful in schirrous affections, the fresh root being scraped into a pulp, and applied externally as a poultice; taken internally, its action is that of a drastic purgative, which is said to procure abortion, and is for that purpose taken, but is a very doubtful and dangerous medicine. “Jerarde believed that merely stepping over this herb caused abortion, and very prudently guarded it in his garden with sticks.” Its acrid principle is thought to be of a peculiar character, and is named *arthanitine*.

No gardener considers his flower borders well stocked with early flowering plants, unless this forms a part; it is one of the earliest to put out its tender bud, and expand its fair bloom, gracefully pendant on its slender stem, amid its shining leaves of varied hues, which at all times are highly ornamental. Several species of this genus are cultivated for the greenhouse, and, by careful management, a regular succession of the flowers may be had all the year round.

It is frequent in the woods and shady places in various parts of Italy; and so profuse in some districts about Pisa, as to give the surface of the ground an apparent clothing, at a short distance, of a delicate pink tissue.

GENUS XII. PRIMULA.—LINN. *Primrose*.

Nat. Ord. PRIMULACEÆ. VENT.

GEN. CHAR. *Calyx* tubular, five toothed. *Corolla* salver-shaped, or funnel-shaped. The *tube* about the length of the calyx, cylindrical, dilated at the orifice. The *limb* of five lobes. *Capsule* ovate, opening with five or ten valves.—Name from *Primulus*, the beginning, on account of the early appearance of the flowers in Spring.

1. *P. vulgaris*, Huds. (Fig. 322.) *common Primrose*. Leaves oblong, ovate, narrowing at the base, wrinkled, irregularly toothed, scape single flowered; limb of the corolla flat.

English Botany, t. 4.—English Flora, vol. i. p. 271.—Hooker, British Flora, vol. i. p. 107.—Lindley, Synopsis, p. 184.—*Primula veris*, *γ. acaulis*, Linn. Sp. 205.

Root scaly, somewhat abrupt, with numerous long branched fibres. *Leaves* numerous, radical, oblong, ovate, gradually tapering at the base into a broadish footstalk, wrinkled, the margin somewhat waved and irregularly toothed, a dark smooth green on the upper side, pale beneath, with a strong hairy mid-rib and numerous branched lateral veins. *Flowers* numerous, each on a slender *scape*, from two to eight inches high, and which, as well as the calyx, is generally thickly clothed with soft woolly hairs; at the base of the stalk is a small subulate scale. *Calyx* tubular, with five angles, and five lanceolate teeth. *Corolla* large, pale sulphur coloured, with five dark radiating spots in the centre; the *limb* of five flat obcordate lobes; the *tube* as long, or rather longer than the calyx, dilated upwards. *Stamens* on short filaments, near the bottom of the tube. *Style* as long as the tube. *Stigma* globular. *Capsule* ovate, opening with five or ten valves. *Seeds* small, numerous.

Habitat.—Woods, hedge banks, and shady pastures abundant.

Perennial; flowering in April and May.

This is thought by some Botanists not distinct from the following species. It is true that the flowers are sometimes found elevated on a common stalk, in a simple umbel, but, as Sir W. J. Hooker observes, if the scapes are traced to their very base, they will be found to spring from one common point, and to constitute a sessile *umbel*. Varieties are sometimes found with pale purplish flowers, but by cultivation many very beautiful varieties are obtained, well known as ornaments to the flower border; amongst these, perhaps the most curious and elegant, is a double pale sulphur coloured one, which appears as if one corolla had been placed within the other. Upon examination, it will be found to be the stamens at the bottom of the tube of the outer corolla, expanded into a perfect corolla. The expansion of stamens into petals is a curious, though frequent occurrence, in cultivation, by which many very beautiful and admirable flowers are obtained, especially in the compound flowers; but in the present instance we have the developement and the union of the five stamens into a blossom of one piece, with five lobes! The student will find these transformations an extremely interesting subject of investigation, to which we can here only direct his attention, as we shall have occasion to do in reference to other subjects for his inquiry, that cannot be here discussed. The primrose is one of the early harbingers of Spring, which has claimed the attention of poets of almost every age in their praise of Spring's return, or strains of tender love. When

“Beaux and Beauties crowd the gaudy groves,
And woo and win their vegetable loves.”

And

“The love sick violet, and the primrose pale,
Bow their sweet heads and whisper to the gale.”

2. *P. elatior*, With. (Fig. 323.) *Oxlip Primrose*. Leaves ovate, contracted below the middle, wrinkled, and irregularly toothed; stalk many flowered; limb of the corolla flat.

English Botany, t. 513.—English Flora, vol. i. p. 271.—Hooker, British Flora, vol. i. p. 107.—Lindley, Synopsis, p. 184.—*Primula veris*, *β. elatior*, Linn. Sp. 204.

Root scaly, with numerous branched fibres. Leaves ovate, wrinkled, waved, and irregularly toothed, contracted about the middle, by which they differ from the leaves of *P. vulgaris*. This character is not, however, a constant one. Flowers mostly numerous, elevated on a round downy stalk, in an umbellate manner, from two to eight inches high. Pedicles of variable lengths, but ultimately all becoming the same, each having at its base a small thin subulate scale. Calyx less downy than *P. vulgaris*, and the corolla smaller, the dark ray around the orifice of the tube mostly darker.

Habitat.—Woods and groves; not uncommon.

Perennial; flowering in April and May.

Much doubt is entertained of this being a distinct species from the above, some persons supposing it to be an hybrid between it and the following. It certainly is very variable in its appearance, and those characters by which it is distinguished are by no means constant; for instance, the leaves are frequently found without the contraction in the middle, while the flowers on the same root have been found single on a scape, and others numerous in an umbel. It varies greatly in the colour of its flowers, and by cultivation many very beautiful shades are obtained, known by the name of Polyanthus.

3. *P. veris*, Linn. (Fig. 324.) *common Cowslip or Paigle*. Leaves ovate, contracted about the middle, wrinkled, and irregularly toothed; stalk many flowered; limb of the corolla concave.

English Botany, t. 5.—English Flora, vol. i. p. 272.—Hooker, British Flora, vol. i. p. 107.—Lindley, Synopsis, p. 184.—*Primula veris*, *α. officinalis*, L. Sp. 204.

Root similar to the above. Leaves ovate, contracted about the middle, frequently heart-shaped at the base, wrinkled and veiny, the margin waved, and more or less toothed, the edges curled back, particularly in a young state, dark green above, paler beneath, and more or less downy, especially towards the margin. Flowers numerous, in a simple umbel, on a round stalk, from three to eight inches long, clothed with soft close pedicles of variable lengths, drooping, each having at its base an ovate subulate scale. Calyx downy, its teeth acute, or obtuse, sometimes emarginate. Corolla smaller than either of the above. The tube as long, or longer than the calyx. The limb concave, of five notched lobes, each having at its base a dark orange spot. Stamens nearly sessile above the middle of the tube. Pistil longer than the tube. Stigma capitate.

Habitat.—Meadows and pastures; frequent in England and Ireland; very rare in Scotland; King's Park and Caroline Park, near Edinburgh. Perennial; flowering in April and May.

Whatever doubt may be entertained with regard to the distinction of the two former species, this will be found more constant in its characters. The smaller darker coloured concave corolla, the stamens inserted in the middle of the tube, the elongation of the style, and the more obtuse segments of the somewhat inflated calyx, are characters which we have observed to remain unaltered (especially the corolla) by cultivation. The modest cowslip is one of the welcome forerunners of Spring, which is hailed with delight by the lover of rural enjoyments, who perambulates the green meadows and pastures, where

“ The sight is pleas'd,
The scent regards each odoriferous leaf,
Each opening blossom freely breathes abroad,
Its gratitude, and thanks him with its sweets.”

The flowers of the cowslip are much used to make an elegant kind of wine, which is mild, and pleasantly impregnated with their fragrance, an infusion is made either of the fresh or dried flowers, and is esteemed as an anodine and sudorific. A beautiful coloured syrup is also made of them, and sold in the shops; it is agreeably flavoured, and is used mostly for children. The fragrance of the flowers was supposed by Shakspeare to reside in the dark spots around the mouth of the tube. He says—

“ The cowslip tall her pensioners be;
In these gold coats spots you see;
Those be rubies, fairy flowers,
In those freckles live their savours,
I must go seek some dew drops here,
And hang a pearl in every cowslip's ear.”

Midsummer Nights' Dream.

4. *P. farinosa*, Linn. (Fig. 325.) *Bird's-eye Primrose*. Leaves obovate, lanceolate, obtuse, crenulated, smooth, mealy. Calyx oblong ovate; limb of the corolla flat; mouth of the tube nearly closed with a notched border; segments obcordate, attenuated at the base, distant, nearly as long as the tube.

English Botany, t. 6.—English Flora, vol. i. p. 273.—Hooker, British Flora, vol. i. p. 108.—Lindley, Synopsis, p. 184.

Root with long branched fibres. *Leaves* numerous, radical, obovate, lanceolate, obtuse, the outer ones frequently roundish, quite smooth, a palish green above, veiny, and covered with a white powder beneath, the margins crenulated in a more or less regular manner, rolled back in a young state. *Flowers* numerous, in a simple umbel at the top of a round smooth more or less powdery stem, erect, from six to twelve inches high, each pedicle having at its base a subulated scale, dilated

and thickened in its lower part. *Calyx* oblong, ovate, mealy, with five prominent angular ribs, and about half-cleft into five lanceolate segments. *Corolla* a beautiful reddish purple, with a yellow eye, paler beneath; *limb* of five flat spreading obcordate segments, narrowing at the base, and distant from each other; *tube* about the length of the limb, its orifice nearly closed with a yellow thickened notched border. *Stamens* nearly sessile at the mouth of the tube. *Pistil* about half the length of the tube. *Stigma* capitate. *Germen* broadly obovate. *Seeds* small, numerous.

Habitat.—Wet mountain pastures; in the North of England, especially in Yorkshire; very prevalent in Teesdale. "Very rare in Scotland: only seen, I believe, South of Edinburgh. The stations given in *Fl. Scotica* all belong to the following species."—Hooker.

Perennial; flowering in June and July.

5. *P. scot'ica*, Hooker. (Fig. 326.) *Scottish Primrose*. Leaves obovate, lanceolate, mealy, scarcely crenulated; calyx swollen, ovate; limb of the corolla flat; mouth of the tube with a glandular border; segments broadly obcordate, close, half the length of the tube.

Hooker in Fl. Lond. N. S. t. 133.—English Flora, vol. i. p. 273.—English Botany, Suppl. 2608.—Hooker, British Flora, vol. i. p. 108.—Lindley, Synopsis, p. 184.

Root with spreading branched fibres. *Leaves* numerous, ovate, lanceolate, smooth, shorter and smaller than the above, as is the whole plant, the mealiness greater, the margins scarcely crenulated. The *flowers* less numerous. The *stem* from three to four inches high. The *calyx* ovate, swollen, with less prominent angles, more mealy, not so deeply cleft, the segments obtuse, and the scales at the base of the pedicles oblong ovate. *Corolla* of a deep purple colour, with a yellow eye; the *limb* with flat obcordate spreading segments, broader, more nearly approximating each other than in *P. farinosa*. The *stamens* are placed lower in the tube, and its mouth is distinctly surrounded with glandular scales, and is longer than the calyx. *Pistil* as long as the stamens. The *stigma* with five points. The *Germen* globose.

Habitat.—Sandy shores; very rare; found on the North Coast of Caithness by Mr. W. Gibb, North Coast of Sutherland, and in the Orkney Islands.

Perennial; flowering in May.

This most beautiful and distinct Northern species, appears peculiar to the countries above mentioned, while *P. farinosa* is found abundantly in the elevated pastures on the continent. They are both beautiful plants for the garden; their small umbels of simple flowers arising from amid their white powdery leaves are very delicate, and seem intermediate species between the Cowslip and Auricula. They are readily cultivated either in the open borders, or in pots, in a damp open situation.



321

Cyclamen hederæfolium



322

Primulacæ vulgaris.



323

Primulacæ elatior.



324

Primulacæ veris.



325

Primulacæ farinosa.



326

Primulacæ scotica.

GENUS XIII. HOTT'ONIA.—LINN. *Featherfoil.*

Nat. Ord. PRIMULAC'EÆ. VENT.

GEN. CHAR. *Calyx* five parted. *Corolla* salver-shaped, with a short tube; the limb of five flat lobes. *Stamens* nearly sessile at the mouth of the tube. *Capsule* globose, tipped with the long persistent style.—Named after *Pierre Hotton*, a Professor at Leyden during the latter half of the seventeenth century.

1. *H. palustris*, Linn. (Fig. 327.) common *Water Violet*, or *Featherfoil*. Flowers in whorls, on a long naked stalk; corolla much longer than the calyx; leaves pectinated.

English Botany, t. 364.—English Flora, vol. i. p. 277.—Hooker, British Flora, vol. i. p. 108.—Lindley, Synopsis, p. 185.

Root long slender whorled fibres. *Leaves* in whorls, dark green, crowded, two to four inches long, beneath the surface of the water, having a mid-rib, with very numerous narrow simple or branched segments, divided in a pectinate or pectinato-pinnatifid manner; from the axis of the leaves are frequently sent out long spreading branches, crowded with whorls of leaves, all submerged. *Stem* rising out of the water erect, from one to two feet long, smooth, round, simple. *Flowers* in five or six terminal whorls, each whorl of from four to eight flowers, on short pedicles, arising from the base of a narrow scale nearly its own length. *Calyx* divided to the base in five linear segments, scattered over more or less profusely with short glandular hairs, as also are the pedicles and the stem between the whorls. *Corolla* of a delicate pale purple or rose colour. The limb of five flat spreading ovate or notched segments. The tube about as long as the calyx, cylindrical. *Stamens* five; the filaments as long as the anther, inserted about the middle of the tube. *Anthems* ovate oblong around the orifice of the tube. *Style* as long, or longer than the tube, sometimes not so long, thickened at the base. *Stigma* globose. *Capsule* globose, surrounded by the persistent calyx, and crowned with the enlarged style, opening with five valves. *Seeds* numerous.

Habitat.—Ditches, pools, and streams of water; not uncommon in England; Downpatrick, Ireland; not found in Scotland.

Perennial; flowering in June and July.

This beautiful species of aquatic plant is highly ornamental to the drains and ditches or slow streams of water, in various parts of England; about Lincoln it grows profusely in the clay, and often not less beautifully in the gravelly districts of many other counties. It is cultivated with success amongst other aquatic plants in streams of water and ponds in pleasure grounds, forming an admirable covering for fish, and at the same time its spreading much divided leaves, sending from their bosom their elegant stem of flowers make

it peculiarly fitted for this purpose. Flowers are sometimes found with six, seven, and eight segments, in their corolla, and with the same number of stamens. The style also is of variable lengths, sometimes very short, at others as long as the tube of the corolla, and sometimes it projects beyond it. The flower is nearly allied in its structure to *Primula*, with the exception of its deeply divided calyx. It is found in similar situations to the above mentioned in almost all parts of the Continent, flowering in Italy in April and May, and in Germany in May and June.

GENUS XIV. ANAGAL'LIS.—LINN. *Pimpernel*.

Nat. Ord. PRIMULACEÆ. VENT.

GEN. CHAR. *Calyx* five parted. *Corolla* wheel-shaped, five lobed. *Stamens* hairy, inserted in the base of the corolla. *Capsule* globose, bursting all round transversely.—Name from *αναγειλαιω*, to laugh, because it was thought that it removed obstructions of the spleen, and thus disposed persons to be cheerful.

1. *A. arvensis*, Linn. (Fig. 328.) *Scarlet Pimpernel*, or *Poor Man's Weather-glass*. Stem widely spreading; leaves opposite, ovate, sessile, dotted beneath. Corolla crenate on the margin, and fringed with small glandular hairs.

English Botany, t. 529.—English Flora, vol. i. p. 281.—Hooker, British Flora, vol. i. p. 105.—Lindley Synopsis, p. 185.

β. cœrulea. (Fig. 329.) Corolla blue toothed on the margin, scarcely with any glandular hairs.—*A. cœrulea*, Schreb.—English Bot. t. 1823.—English Flora, vol. i. p. 281.—Lindley, Synopsis, p. 185.

Root of small branched fibres. *Stem* square, smooth, much branched, and widely spreading in the lower part, frequently dotted like the under side of the leaves, with purple dots. *Leaves* opposite, sessile sometimes, though rarely three or four together, ovate, acute, with three principal ribs from the base, smooth, bright green, sometimes slightly downy. *Flowers* axillary, solitary, on a square slender *pedicle*, longer than the leaves, erect when in flower, elongated and recurved when in fruit. *Calyx* of five lanceolate segments, with a green keel and pale membranous margin. *Corolla* wheel-shaped, with a very short tube. The limb of five deep flat segments, of a bright scarlet colour, crenated on the margin, and with short glandular hairs, most numerous when in bud, or when first expanded; these hairs are far less numerous on the more deeply notched margins of the *β. cœrulea*, which appears to be the only character of distinction between the two, except the dark splendid blue of the latter, which, instead of being purple

round the orifice of the tube, as is the scarlet flower, it is scarlet. *Stamens* inserted around the orifice of the tube. *Filaments* dilated at the base, shorter than the limb of the corolla, and more or less thickly closed with glandular hairs. *Anthers* heart-shaped. *Style* longer than the stamens. *Stigma* obtuse, notched. *Capsule* globose, smooth, with five ribs, crowned with the persistent style, and bursting open all round into two hemispheres. *Seeds* numerous, angular, arranged in a globose manner around the central receptacle.

Habitat.—Corn fields, road sides, and waste places; frequent.

Annual; flowering from June to August.

Much doubt has been entertained as to whether the blue flowered plant is a distinct species or not; it is still retained as such by some Botanists: but the Rev. Professor Henslow has proved, by cultivation from seed, that they are varieties of the same species; and certainly in the greater number of specimens which we have collected, both in various parts of England and the Continent, we are unable to perceive any difference in their character, except the fugacious one of the colour of the corolla, not even those above mentioned of the more deeply notched corolla, and fewer glandular hairs are by any means constant.

This pretty ornament to our cultivated fields and road sides is one of those remarkable plants which close their petals over the stamens and pistil, to protect them from injury, on the approach of rain. Hence it is that it has obtained the common name of poor man's weather-glass. It has been lauded as a remedy in cases of epilepsy, and even hydrophobia was said to be conquered by its use, for which it was used both in powder extract and infusion, but has now entirely lost its reputation.

2. *A. tenella*, Linn. (Fig. 330.) *Bog Pimpernel*. Stem creeping prostrate, filiform, leaves opposite, ovate, or roundish, on footstalks.

English Botany, t. 530.—English Flora, vol. i. p. 282.—Hooker, British Flora, vol. i. p. 106.—Lindley, Synopsis, p. 183.

Root fibrous, frequently put out from the axis of the leaves of the branched prostrate stems, which lay close to the earth, and are thus continued for some distance around the central root; the stem is slender, thread-like, smooth, angular, from two to three inches long. *Leaves* numerous, opposite on short footstalks, roundish, or ovate, smooth, shining, pale green, veiny, and mostly finely dotted beneath. *Flowers* axillary, on long slender pedicles, large for the size of the plant. *Calyx* of five lanceolate segments. *Corolla* three times as long as the calyx. The tube very short. The limb deeply divided in five ovate segments, of a beautiful pale rose colour, deeply pencilled with veins. *Stamens* nearly as long as the corolla. *Filaments* dilated at the base, fringed with long-headed hairs, each of which is terminated with a small gland. *Anthers* small. *Pistil* longer than the stamens.

Stigma obtuse. *Capsules* similar to the last, but smaller; its pedicle recurved or twisted.

Habitat.—Damp, mossy, or boggy situations; not unfrequent in England and Ireland; less common in Scotland.

Perennial; flowering in July and August.

This elegant little plant, growing in thick tufts, is cultivated with great ease either in situations in pleasure grounds similar to its native habitat, or in pots in a cool place in the greenhouse, where, with a sufficient supply of moisture, it flowers abundantly, and is extremely pretty, hanging over its slender branches of pale green leaves and delicate flowers. The hairs of the stamens are very beautiful and curious in their structure; when viewed with a strong magnifying power, each appears a string of minute delicate transparent beads; and the manner in which the capsules burst open for the escape of the seeds is also remarkable.

GENUS XV. LYSIMACHIA.—LINN. *Loosestrife*.

Nat. Ord. PRIMULACEÆ. VENT.

GEN. CHAR. *Calyx* five parted. *Corolla* wheel-shaped, five lobed. *Stamens* scarcely hairy, inserted into the base of the corolla. *Capsule* globose, opening with five valves.—Named in honour of King *Lysimachus*, who, it is said, first discovered it.

* 2. *L. vulgaris*, Linn. (Fig. 332.) *Great Yellow Loosestrife*. Stem erect, leaves ovate lanceolate, two, three, or four in a whorl, panicle, terminal, many flowered.

English Botany, t. 761.—English Flora, vol. i. p. 278.—Hooker, British Flora, vol. i. p. 106.—Lindley, Synopsis, p. 184.

Roots with spreading underground stems. *Stems* erect, from two to three feet high, leafy, angular, simple or branched, more or less downy. *Leaves* ovate lanceolate, on short footstalks, with a strong mid-rib, and numerous lateral branched veins, mostly downy, paler on the underside, the upper frequently scattered over with small glands. *Inflorescence* a terminal whorled panicle of numerous yellow flowers, its branches downy, each pair subtended by two small floral leaves. *Flowers* on short pedicles, with an awl-shaped bractea. *Calyx* downy, in five deep lanceolate segments, the edges pink, glandular, and finely fringed. *Corolla* large, of five ovate, acute, spreading lobes. The tube very short. *Stamens* shorter than the corolla. *Filaments* somewhat downy, dilated and united at the base, inserted around the orifice of the tube of the corolla. *Pistil* longer than the stamens. *Stigma* obtuse. *Capsule* globose, opening with five valves. *Seeds* ovate.



327

Hottonia palustris.



328

Anagallis arvensis



329

Anagallis coccinea.



330

Anagallis tenella.



331

Lysimachia thyrsiflora.



332

Lysimachia vulgaris.



333

Lysimachia punctata.



334

Lysimachia nemorum.



335

Lysimachia nummularia.



336

Menyanthes trifoliata.



337

Villarsia nymphaeoides.



338

Erythraea centaurium.

Habitat.—Damp situations; on the banks of drains and rivers; not unfrequent in England and Ireland, but less so in Scotland.

Perennial; flowering in June and July.

This ornamental plant is frequently cultivated in gardens, where it seems to flourish equally well in a dry as a damp situation, beneath the shade of trees, or on the open border; and its large handsome panicle of gay flowers keeps a long time in bloom, which is an additional recommendation.

1. *L. thyrsoïd'ra*, Linn. (Fig. 331). *tufted Loosestrife*. Stem erect, leaves opposite, lanceolate, racemes axillary, of numerous crowded flowers.

English Botany, t. 176.—English Flora, vol. i. p. 279.—Hooker, British Flora, vol. i. p. 106.—Lindley, Synopsis, p. 184.

Root in whorled fibres, with numerous creeping underground stems. *Stem* erect, from one to two feet high, round, smooth, succulent, and leafy; simple. *Leaves* sessile, opposite, sometimes three or four in a whorl, lanceolate, narrower upwards, quite smooth, paler on the under side, with a strong mid-rib. *Inflorescence* axillary, racemes on long erect stalks. *Flowers* numerous, densely crowded, small, yellow, spotted with orange. *Pedicle* short, downy from the axis, with a thin awl-shaped downy bractea. *Calyx* with narrow lanceolate segments, a strong mid-rib, and mostly scattered over with small orange coloured glands. *Corolla* in five narrow spreading segments, with small intermediate teeth, and, like the calyx, scattered over with small orange coloured glands. *Stamens* longer than the corolla, inserted into the orifice of its very short tube. *Filaments* dilated at the base, and united together. *Pistil* longer than the stamens. *Stigma* obtuse, notched. *Capsule* globose. *Seeds* small, smooth, with a very narrow margin.

Habitat.—Marshes, and sides of water; very rare in England; East Riding of Yorkshire; King's Langley, Hertfordshire; in Anglesea. More frequent in Scotland; near Forfarshire, and at Duddingstone Loch on the East; Canal side, near Possil; and near Rossahue, by Loch Lomond. Not found in Ireland.

Perennial; flowering in June and July.

It is doubtful if this plant is now found in a wild state in England; but in Scotland we have collected it abundantly, where it not only grows on the bank sides, but in the water. The number of the parts of the flower are variable; the segments of the calyx and corolla are frequently ten, as well as the stamens, and the leaves sometimes four in a whorl. The small glands on the flowers are frequently numerous, but sometimes absent on the leaves; they are mostly very numerous, and are best seen when in a dry state.

3. *L. puncta'ta*, Linn. (Fig. 333). *four-leaved Loosestrife*. Stem erect, downy; leaves on short stalks, whorled, ovate-lanceolate; peduncles axillary, single flowered.

Hooker, British Flora, vol. i. p. 106.—Lindley, Synopsis, Suppt. p. 327.

The whole plant clothed with soft spreading glandular down. *Root* with creeping underground stems. *Stem* erect, simple or branched, from one to two or three feet high, round and leafy. *Leaves* in whorls, of from three to five, on short stalks, ovate-lanceolate, with a strong mid-rib, and numerous lateral branched veins, paler and more downy beneath, especially near the margin, more or less profusely scattered over with small glandular dots. *Flowers* large, yellow, in axillary whorls, each on an erect slender hairy pedicle, shorter than the leaves from the axis of which they arise. *Calyx* of five narrow lanceolate segments, clothed with short glandular hairs. *Corolla* of five ovate-lanceolate segments, united at the base into a very short tube. The margins ciliated with short glandular hairs, and mostly scattered over with minute glandular spots. *Stamens* about half as long as the corolla. The *filaments* dilated at the base, and united about half their length into a tube, scattered over with glandular hairs. *Pistil* about as long as the stamens. *Stigma* obtuse. *Capsule* globose, dotted.

Habitat.—Moist banks of rivers; rare. "Discovered by the late Mr. Nathan Backhouse, in 1803, on the margins of the Skern, north of Darlington; most frequent on the west side of the river, both above and below the railway bridge."—Hooker. Who in a note adds, "I regret that the existence of this plant in the station above quoted, has not been confirmed by Botanists, who have subsequently visited the spot;" and that "it will probably, ere long, be found in other situations."

This is a frequent plant on the Continent in shady places, and especially in Italy. We have found it in damp groves and shady places, by the side of rills and the mountain streams of the Apennines, growing from one to three and four feet high, branched, especially above, or simple, and the stem thickly clothed with a soft down.

Perennial; flowering in June.

4. *L. Ne'morum*, Linn. (Fig. 334). *yellow Pimpernell, or Wood Loosestrife*. Stem procumbent; leaves opposite, ovate, acute, smooth; peduncles axillary, single flowered; segments of the calyx linear, subulate; filaments smooth.

English Botany, t. 527.—English Flora, vol. i. p. 279.—Hooker, British Flora, vol. i. p. 106.—Lindley, Synopsis, p. 184.

Roots fibrous from the axis of the lower leaves. Whole plant smooth and shining. *Stems* slender, angular, reddish, from twelve to eighteen inches long, simple or branched in the lower part, where it puts out roots from the axis of the leaves, loosely spreading above. *Leaves* opposite, ovate, acute, on short footstalks, shining above, paler beneath, with a mid-rib, and two or four lateral ones from the base. *Flowers*

bright yellow, axillary, one only from the axis of the upper leaves, on a long slender *peduncle*, straight when in flower, becoming recurved and twisted when in fruit. *Calyx* in five linear subulate segments, nearly as long as the corolla. *Corolla* divided nearly to the base in five ovate acute segments. *Stamens* shorter than the corolla, with slender smooth filaments, free at the base. *Anthers* long, narrow. *Pistil* longer than the stamens. *Stigma* obtuse. *Capsule* globose, crowned by the persistent style.

Habitat.—Woods, banks, and shady places; frequent.

Perennial; flowering during the summer months.

This gay little plant is a great ornament to wood banks and shady groves, and is admirably suited for the sides of walks and banks in pleasure grounds and plantations, which are rather moist; its loose spreading stems clothed in their bright shining leaves, intermixed with the glowing yellow flowers, which are continually opening out during the whole of summer, make gay the bank, and flourishes where but few ornamental plants will grow. In similar situations, we have also seen the following species; it, however, prefers a wetter soil than the above, and is best suited for the banks of ponds and streams, where it spreads its branches, and soon covers the ground with a thick mat of its stems, leaves, and numerous flowers.

5. *L. nummularia*, Linn. (Fig. 335). *creeping Loosestrife, Moneywort, or Herb Twopence*. Stems prostrate; leaves opposite, rotundate, cordate, smooth; peduncles axillary, single flowered; segments of the calyx ovate cordate; filaments glandular.

English Botany, t. 528.—English Flora, vol. i. p. 280.—Hooker, British Flora, vol. i. p. 107.—Lindley, Synopsis, p. 184.

Roots fibrous from the axis of the lower leaves. Whole plant smooth and shining, pale green, and scattered over with glandular spots, which are best seen after the plant is dried. *Stem* slender, angular, branched or simple, from a few inches to two feet long, lying close to the ground, and sending out roots from the lower leaves. *Leaves* mostly very numerous, and crowded in the lower part, opposite, on short footstalks, roundish, and more or less cordate at the base, obtuse or acute at the apex, with a prominent mid-rib, and numerous lateral branches, the margins more or less waved. *Flowers* rather large, of a pale yellow, each on a peduncle, arising singly from the axis of the leaves. *Peduncles* of variable lengths, sometimes as long as the leaves, at others much longer, angular. *Calyx* of five heart-shaped segments, sometimes ovate, acute. *Corolla* of five ovate acute segments, united at the base, scarcely forming a tube, veiny, scattered over with small glands, the margin ciliated, with short glandular hairs. *Stamens* about half the length of the corolla. *Filaments* dilated at the base, and scattered over with glandular hairs. *Anthers*

ovate oblong. *Pistil* about the length of the stamens. *Stigma* obtuse notched. *Capsule* seldom perfected, globose.

Habitat.—Wet shady pastures and banks; not so common as the last.

Perennial; flowering in June and July.

Infusions or decoctions of this plant are said to be vulnary and antiscorbutic, and useful in dysentery. Pliny, moreover, says it tames restive horses; but now-a-days we do not find it to have any of these virtues, either for one complaint or other, much less for the purpose in which Pliny says it is so potent.

GENUS XVI. MENYANTHES.—LINN. *Buckbean*.

Nat. Ord. GENTIANÆ. JUSS.

GEN. CHAR. *Calyx* five parted. *Corolla* funnel-shaped. The limb of five spreading segments, bearded within. *Stigma* capitate, two lobed. *Capsule* two valved. *Seeds* numerous.—Name from “*μηνη*, a month; and *ανθος*, a flower.”

1. *M. trifolia* 'ta, Linn. (Fig. 336.) common *Buckbean*, or *Marsh Trefoil*. Leaves ternate.

English Botany, t. 495.—English Flora, vol. i. p. 275.—Hooker, British Flora, vol. i. p. 168.—Lindley, Synopsis, p. 179.

Root long, branched fibres from the joints of the long creeping underground stems, which are mostly very numerous, and matted together, round, smooth, stout, succulent, passing into flowering stems, which are procumbent at the base, mostly clothed with the dry membranous sheath of old leaves, frequently branched, ascending towards the summit, where it is leafy. *Leaves* ternate, on a long stout footstalk, terminating in their membranous sheaths enfolding the stem, leaflets ovate or obovate, sometimes acute, or ovate-lanceolate, smooth, with a stout mid-rib, and numerous lateral branches, the margins waved, or somewhat toothed. *Inflorescence* a raceme, or thyrus, of numerous flowers, on a round smooth succulent stalk, from four to eight inches long, arising from the axis of the leaves. *Flowers* crowded, white or flesh coloured, tipped externally with pink, on round, smooth, short pedicles from the axis, of a small ovate or ovate acute bractea. *Calyx* of five ovate deeply divided segments, about half as long as the funnel-shaped corolla. The tube short, dilated upwards. The limb of five segments, ovate, acute, reflexed, smooth and veiny externally, much bearded within, with long slender waved filaments. *Stamens* the length of the corolla. *Filaments* slender, from about the

middle of the tube. *Anthers* deeply cloven at the base. *Pistil* about as long as the corolla. *Stigma* of two lobes. *Capsule* ovate, surrounded at the base by the persistent calyx, opening with two valves, the seeds attached to the parietal placenta, formed by the inflexed margins of the dissepiments. *Seeds* numerous, light brown, smooth polished. *Embryo* straight, in the axis of the albumen. The *radicle* placed next the hilum.

Habitat.—Marshes and boggy situations; frequent.

Perennial; flowering in June and July.

The leaves of the Buckbean have a very bitter nauseous taste, with a faint disagreeable smell. On account of its bitter property, it is used in some places as a substitute for hops, but is far from possessing the fine aroma of the flowers of that plant. It is tonic, somewhat diuretic and purgative, and is said to have been useful in some cases of fever, rheumatism, and painful affections of the joints; and also in diseases of the skin. It is used by making an infusion of half an ounce of its dried leaves in half a pint of boiling water, and taking a wine glass of it two or three times a day. It is also taken in doses from a scruple to a drachm of its leaves in fine powder. It is, however, seldom used in modern practice, since a more elegant substitute is found in other plants of the Gentian tribe. In cattle it is said to cure the disease called *darn*; in doses, of course, proportionately larger than those stated above. Its roots, like those of many other plants, are useful in rendering boggy ground more firm by their matting themselves together; and, by their gradual decomposition, deposits of vegetable matter are formed, which, by a succession of years, is raised above the water, when other plants take possession of it, and at length a firm footing is obtained, and it becomes subservient to the use of the animal creation. Lands thus rescued from the watery element, it is well known, are extremely productive for a very considerable period after; and if boggy grounds, such as we see in many parts of the kingdom, were artificially drained, instead of being left to this slow process of nature, there can be little doubt but they would well repay the expense and labour bestowed upon them in the course of a very short time, as we see exemplified in many districts of Lincolnshire, and in other counties.

GENUS XVII. VILLAR'SIA.—VENT. *Villarsia*.

Nat. Ord. GENTIAN'ÆE. JUSS.

GEN. CHAR. *Calyx* five parted. *Corolla* rotate. The limb of five spreading segments, the margins inflexed in æstivation, bearded in

the throat, five glands alternating with the stamens. *Stigma* five-cleft. *Capsule* two valved. *Seeds* numerous. *Leaves* simple.—Named in compliment to *M. de Villars*, author of *Flora des Dauphine*.

1. *V. nymphæoides*, Vent. (Fig. 337.) *Nymphæa*-like *Villarsia*. *Leaves* floating, orbicular, cordate; flowers in axillary sessile umbels; corolla ciliated.

Hooker, *British Flora*, vol. i. p. 109.—Lindley, *Synopsis*, p. 180.—*Menyanthes nymphæoides*, Linn.—E. Botany, t. 217.—English *Flora*, vol. i. p. 276.

Roots long, round, cord-like. *Stems* long, round, smooth, succulent, much branched, and spreading. *Leaves* floating on the surface of the water, roundish, heart-shaped at the base, the margins more or less waved or toothed, smooth, shining, pale variegated green above, a darkish purple beneath, and thickly scattered over with small elevated spots. *Footstalks* long, round, dilated and membranous at the base, and from their axis arise the *flowers*, in a sessile umbellate manner. The *pedicles* round, smooth, erect when in flower. *Calyx* in five lanceolate obtuse segments, about half the length of the corolla, smooth. *Corolla* large, yellow, rotate, in five spreading segments, the margins curiously inflexed in æstivation, and more or less fringed, with a smooth darker radiating disk; the orifice of the short tube fringed with simple hairs, around which also are placed the *stamens* on short *filaments*, alternating with five oblong *glands*. *Pistil* about half as long as the corolla. *Stigma* five-cleft. *Capsule* ovate, of one cell, two valves, many seeded.

Habitat.—Rivers and still waters; rare. In the Thames; abundant in the Canal, near Downham Market, and Wisbeach; and several places in Yorkshire.

Perennial; flowering in July and August.

This rare but beautiful plant is readily cultivated in ponds or streams of water; and when it has once established itself, it is afterwards difficult of extirpation. It is highly ornamental in the drains and rivers of Holland, and many other parts of the continent, entirely covering the surface of the water with its beautiful floating leaves and stems, and its rather large elegant flowers successively rising and expanding their curious structured corollas, making gay the abode of the croaking frog, (*Rana temporaria*), and undulating leech, (*Hirudo medicinalis*) two sleek animals, known to most persons, but favourites with few. We once in one of our botanical perambulations, in search of aquatic plants, had our attention attracted by them. The frog, evidently in a state of perturbation, was endeavouring to escape with all the exertion that it could make from an attack of the wily leech; but with all its leaping, swimming, and croaking, it could not shake off its close companion, who had attached itself firmly upon its leg: and to judge

from the swollen and increasing size of the leech, we supposed he was making a very hearty meal at the expence of the vivifying blood of the poor animal. We watched them some time; but the frog, what with exhaustion from the loss of blood, the exertion it had made, and the fright which it appeared to be in, leaped upon a leaf of the *Villarsia*, a bark which being unable to sustain such a cargo, sunk, and its burden disappeared.

GENUS XVIII. ERYTHRÆA.—RENEALM. *Centaury*.

Nat. Ord. GENTIAN'ÆE. JUSS.

GEN. CHAR. *Calyx* five-cleft. *Corolla* funnel-shaped, its limb short. *Anthers* after bursting spirally twisted. *Style* erect. *Stigmas* two. *Capsule* linear, of two cells, with the margin of the valves turned inwards.—Name from *ερυθρος*, red, the colour of the flowers in most of the species.

1. *E. Centaurium*, Pers. (Fig. 338). *common Centaury*. Stem somewhat branched; leaves ovate oblong; flowers nearly sessile, in fasciculated corymbs. *Calyx* half as long as the tube of the corolla. The segments of the corolla oval.

English Flora, vol. i. p. 321.—Hooker, British Flora, vol. i. p. 109.—Lindley, Synopsis, p. 178.—*Chironia Centaurium*.—English Botany, t. 417.—*Gentiana Centaurium*. Linn.

Root tapering, with branched fibres. *Stem* erect, simple, or mostly with short branches, from eight to eighteen inches high, smooth, square. *Leaves* opposite, smooth, sessile, the radical ones bright green, sometimes on short broad footstalks, spreading, mostly broader than those of the stem, all ovate oblong, with three main ribs, in luxuriant specimens, the lower ones have five, and the upper ones in distant pairs are narrower, and become somewhat lanceolate. *Inflorescence* a branched, more or less dense fasciculated corymb. *Flowers* numerous, nearly sessile, each little pedicle having a narrow bractea, and sometimes round, the base of the calyx there are several small awl-shaped scales. *Calyx* in five deep linear segments, with a pale narrow membranous margin, about half the length of the tube of the corolla. *Corolla* salver-shaped. The tube long, pale, with numerous slender veins. The limb a beautiful pink, of five ovate segments, spreading only in the sunshine, closed in the dark, and cloudy weather, and immediately after gathering the plant. *Stamens* inserted around the contracted orifice of the tube. The filaments slender, threadshaped, about half as long as the limb of the corolla. *Anthers* oblong, of two cells, becoming spirally twisted after the escape of the pollen. *Pistil*

with a narrow oblong compressed *germen*, a shortish *style*, somewhat oblique or recurved, and *stigma* of two roundish lobes. *Capsule* closely invested with the persistent corolla, linear of two imperfect cells, two valves, and many *seeded*.

Habitat.—Dry gravelly fields, and road sides; frequent.

Annual; flowering from July to August.

So extremely delicate are the flowers of this plant, that they will only shew their blushing beauty at the solicitation of a glowing sun, when they may expect numerous passing visits from the insect throng to pay homage to their beauty, and inspect the curious structure of their spiral cells.

The whole plant is without odour; but the stem, leaves, and petals, are strongly impregnated with a bitter resinous matter or mucus, which is imparted to boiling water, or spirits of wine. It is tonic and antiseptic; and before the introduction of cinchona bark, was used in cases of fever: it is not, however, used in modern practice, but is one of the great remedies of the village doctress, and is, no doubt, useful in some dispeptic complaints, taken in the form of powder, or half an ounce of the herb in half a pint of boiling water, taking a fourth of it two or three times a day.

2. *E. pulchella*, Hooker. (Fig. 339.) *Dwarf-branched Centaury*. Stem much branched; leaves ovate oblong; flowers on short stalks, in loose panicles; calyx nearly as long as the tube of the corolla; the segments of the corolla oblong.

Hooker, *Flora Scotica*, vol. i. p. 79; and *British Flora*, vol. i. p. 109.—*English Flora*, vol. i. p. 323.—Lindley, *Synopsis*, p. 178.—*Chironia pulchella*.—*English Botany*, t. 458.—*Gentiana Centaurium*, β. Linn.

We are much disposed to follow Linnæus in considering this as a variety of the *E. Centaurium*. We have frequently met with specimens in the dry sandy districts of Nottinghamshire, differing in no respect from those grown on the sea shores in various parts of the coast, except that they had been cropped down by cattle, consequently had become much branched and lax, fewer flowered, and with shorter leaves.

Habitat.—Sandy sea shores. England and Scotland; Cape Clear Island; and near Bangor, county of Down, Ireland.

Annual; flowering from July to August.

3. *E. littoralis*, Hooker. (Fig. 340.) *Dwarf-tufted Centaury*. Stem simple, or branched; leaves linear-obovate obtuse; flowers nearly sessile, in close capitate corymbs; calyx as long as the tube of the corolla; the segments of the corolla ovate.

Hooker, *Flora Scotica*, vol. i. p. 80; and *British Flora*, vol. i. p.



339

Erythræa pulchella



340

Erythræa littoralis.



341

Erythræa latifolia.



342

Palemonium cæruleum.



343

Convolvulus arvensis.



344

Convolvulus sepium.

109.—English Flora, vol. i. p. 321.—Lindley, Synopsis, p. 178.—*Chironia littoralis*.—English Botany, t. 2305.

This, we also think, would be more properly regarded a variety of *E. Centaurium*; we have found it equally common with the preceding. It differs in the *leaves*, being narrower, and in more distant pairs, with one or three ribs, the margins sometimes minutely toothed. The *stem* simple or branched from the base or stem, often obscurely angular. The *calyx* as long as the tube of the corolla; and the *limb* of the corolla with ovate segments, larger in proportion to the size of the plant; and the *flowers* more crowded into a capitate corymb. One or other of these characters are so variable from the variety of situations of growth, as to render it difficult to determine (if they are to be regarded as species) to which to refer it.

Habitat.—Sandy districts, especially near the sea; England, Scotland, and Portmarnock, Ireland.

Annual; flowering in June and July.

4. *E. latifolia*, Smith. (Fig. 341.) *broad-leaved tufted Centaury*. Stem three branched at the top; flowers in dense forked tufts; calyx as long as the tube of the corolla; segments of the corolla lanceolate; lower leaves broadly elliptical, with five or seven ribs.

English Flora, vol. i. p. 322.—English Botany, Suppt. t. 2718.—Hooker, British Flora, vol. i. p. 110.—Lindley, Synopsis, p. 178.

Whether this is a species or a variety of *E. Centaurium* we are unable positively to determine, for so variable are the characters of the British plants of this genus, that it is difficult to say which is a species and which a variety. The present is, perhaps, more distinct from *E. Centaurium* than those above mentioned; its leaves are broader, larger, and more obtuse, especially the radical ones. The stem is short, three branched at the top; and the calyx segments as long as the tube of the corolla, but yet not any of these characters are constant: and we cannot think it is more than a variety. It is not uncommon in sandy districts, growing with others in every intermediate stage between this and *E. Centaurium*. Were we disposed to multiply species, or enumerate varieties, many might be mentioned. We have now before us specimens nearly two feet high, some single, and others with numerous stems from the branched root, and obscurely angular; the leaves lanceolate, three and five ribbed; the stem three branched at the top; the flowers in dense tufts, almost capitate; the calyx as long, or longer than the tube of the corolla; the bractea long as the tufts of flowers, narrow, awl-shaped, and the style somewhat bent; but we cannot think that it is any thing more than a variety of *E. Centaurium*. It was grown in a moist sandy situation amongst corn.

Habitat.—Sea shores, and sandy situations.

Annual; flowering in July and August.

GENUS XIX. POLEMONIUM.—LINN. *Jacob's Ladder.*

Nat. Ord. POLEMONIACEÆ. JUSS.

GEN. CHAR. *Calyx* five-cleft. *Corolla* wheel-shaped, with a short tube. The limb of five lobes. *Stamens* dilated and hairy at the base, closing the mouth of the tube. *Stigmas* three-cleft. *Anthers* incumbent. *Capsule* of three cells and three valves. *Seeds* numerous.—Name from *πολεμος*, war; on account, according to a tale related by Pliny, of its having been the occasion of a war between two Kings, from a dispute that arose between them as to who was the discoverer of its uses. He further states that the *Polemonium* of the ancients was called *Chilodynamia*, from *χίλιος* and *δυναμις*, on account of the many virtues that it is related to possess.

1. *P. æru'leum*, Linn. (Fig. 342.) *Jacob's Ladder*, or *Greek Valerian*. Stem smooth, leafy; leaves pinnated; leaflets oblong-lanceolate, smooth, panicle clothed with glandular hairs; flowers erect.

English Botany, t. 14.—English Flora, vol. i. p. 287.—Hooker, British Flora, vol. i. p. 113.—Lindley, Synopsis, p. 168.

Root of branched fibres. *Stem* erect, smooth, slightly angular, from one to two feet high, leafy, green, or sometimes pinkish. *Leaves* alternate, the lower ones on long common stalks, the upper short. *Leaflets* smooth, sessile, or on short footstalks, oblong-lanceolate, opposite or alternate, with an odd one at the end, and all of nearly an equal size. *Inflorescence* a branched panicle, more or less clothed with soft glandular hairs. *Flowers* numerous, large, blue, sometimes white, on short stalks, mostly crowded. *Calyx* about half five-cleft; the segments ovate-lanceolate, acuminate, more or less thickly clothed with glandular hairs, especially at the base, and each segment with one or three simple or branched ribs, persistent, and enveloping the capsule, enlarging after flowering as it advances to maturity. *Corolla* wheel-shaped, with a short tube, and large five lobed spreading limb, regular or somewhat unequal, imbricated in estivation, mostly waved on the margin, and beautifully pencilled over with dark purple veins. *Stamens* alternating with the segments of the corolla, and nearly as long. The *filaments* dilated and hairy at the base, closing over the mouth of the tube. *Style* simple, as long as the corolla. *Stigma* three-cleft. *Capsule* triangular, of three cells, three valves, each valve with an external furrow and prominent internal rib attached to the central placenta, and forming the internal walls of the cells. *Seeds* angular, or oval.

Habitat.—Banks and bushy places; rare. On the banks of the river Derwent, near Fox Inn, and Castleton Dale, Derbyshire, not

unfrequent; Craven and Gordale, Yorkshire; about Queensferry, Arniston and Delvine Woods, Scotland; Knockmaroon Hill, near Chapelizod, Ireland.

Perennial; flowering in June and July.

This pretty plant, known by the name of *Greek Valerian*, or the more common one of *Charity*, is a garden flower, much cultivated, continuing in flower a long time, and varying greatly in its colours from a dark blue to a pure white. This, like many other plants distinguished by ancient names, is not found to possess the many virtues that it is related to have had in former times; or it is that we apply the names to other plants than they formerly distinguished. In the present case, the plant appears scarcely to have any sensible medical qualities, much less those of such great importance as to have induced Kings to have waged war against each other, to settle a dispute as to who was to have the honour of being considered the discoverer of so rare and valuable a plant.

GENUS XX. CONVULVULUS.—LINN. *Bindweed*.

Nat. Ord. CONVULVULACEÆ. JUSS.

GEN. CHAR. *Calyx* five-cleft. *Corolla* bell-shaped, folded in five plaits. *Stigmas* two. *Capsule* of from one to four cells, with as many valves. *Seeds* one or two in each cell.—Name from *Convolv*, to entwine.

* *Flowers with two distant bracteas*.

1. *C. arven'sis*, Linn. (Fig. 343.) *small Bindweed*. Stem climbing; leaves arrow-shaped, their lobes acute; peduncles mostly single flowered; bracteas small, distant from the flowers.

English Botany, t. 312.—English Flora, vol. i. p. 285.—Hooker, British Flora, vol. i. p. 112.—Lindley, Synopsis, p. 167.

Root with very long creeping underground stems, spreading to a considerable distance, and difficult of extirpation. *Stem* slender, angular, simple or branched, smooth below, downy towards the end of the branches, prostrate, unless near some plant, round which it can entwine and support itself. *Leaves* alternate, arrow-shaped, round, or obtuse at the apex, the lobes at the base acute, spreading, smooth or downy, with a mid-rib and slender lateral veins, on a slender channelled footstalk. *Flowers* arising from the axis of the leaves, solitary, or in pairs, on a slender angular stalk about as long or longer than the leaves, and, like them, more or less hairy, each flower having a distant pair of awl-shaped bractea. *Calyx* of five ovate obtuse hairy segments.

Corolla bell-shaped, about an inch broad at the mouth, mostly a delicate pink or rose colour, with white rays from the yellowish centre, having five plaits, and five indistinct lobes. *Stamens* from the base of the corolla, dilated below, slender, about half as long as the corolla, two mostly shorter than the others. *Anthers* arrow-shaped. *Style* as long as the stamens. *Stigmas* two, oblong, spreading, downy. The capsules are seldom perfected; it propagates itself by the underground stems.

Habitat.—Corn fields, hedges, and gardens; very common, especially in a light soil.

Perennial; flowering from July to August.

This is a very troublesome plant to the farmer, though greatly ornamental to his fields. The flowers are beautiful in colour, and delicately formed, exhaling a fragrant odour in dry warm weather, and closing closely up in rain, or when the sky is cloudy. It contains a cathartic resin, but in a far less proportion and much less active than the well known Scammony or Jalop, as well as other plants belonging to this order.

The leaves are very variable in size, and their having acute, obtuse, or elongated lobes at the base, being smooth or downy, together with the variable depth of colour in the flowers, seem to depend upon the situation of its growth, or rather the nature of the soil, as to the lightness or richness of its quality.

**** Flowers with two large bractees at the base. *Calystegia*.—R. Brown.**

2. *C. sepium*, Linn. (Fig. 344.) *great Bindweed*. Stem climbing; leaves arrow-shaped, their lobes truncate, often toothed peduncles, single flowered, four sided; bractees large, heart-shaped, close beneath the calyx.

English Botany, t. 313.—English Flora, vol. i. p. 285.—Hooker, British Flora, vol. i. p. 113.—*Calystegia sepium*.—Lindley, Synopsis, p. 167.

Root with long creeping somewhat fleshy underground racemes. *Stem* slender, angular, twisted, smooth, woody, much branched, climbing and spreading, many feet around. *Leaves* large, arrow-shaped, alternate, acute at the apex, lobes at the base abruptly cut, or obtusely toothed, or even as the rest of the margin generally is, quite smooth, a lively green, paler and somewhat glaucous beneath, with a mid-rib, and numerous smaller lateral branched veins, on a slender furrowed footstalk, which frequently twists around other plants to assist in supporting itself. *Flowers* large, solitary, from the axis of the leaves, very handsome, pure white, or with a pale pink ray, about two inches across the mouth, on a rather slender square smooth stalk, scarcely as long as the leaves, having two large dilated oblong heart-shaped veiny *bractees* immediately beneath, and enclosing the

calyx, leafy, quite smooth. *Calyx* of five ovate segments, about half as long as the bractea. *Corolla* bell-shaped, folded with five plaits, and indistinctly lobed. *Stamens* arising from the base of the corolla, equal in length, not half as long as the corolla. The *filaments* dilated downwards, downy. *Anthers* oblong, arrow-shaped. *Style* smooth, longer than the stamens, slender. *Stigma* of two spreading ovate downy lobes. *Capsules* of one or four imperfectly formed cells. *Seeds* ovate, few. The capsules are seldom perfected; the plant increasing by its underground stems.

Habitat.—Woods, hedges, and thickets, especially in a moist soil; frequent.

Perennial; flowering from June to August.

This beautiful species of *Convolvulus* is much larger than the last, and highly ornamental to our rural lanes and sequestered dells, throwing its slender arms around perhaps the fragrant woodbine, and mingling with its sweets its gay and more conspicuous attire, adorning the sylvan bower in rich festoons of varied hues; or climbing some tree hard by, it hangs pendent from its outstretched boughs its lengthened folds of living drapery. It is readily distinguished from *C. arvensis*, by its large bracteas beneath the calyx. The flowers are mostly much larger, and the stigmas two obtusely ovate lobes.

3. *C. soldanella*. Linn. (Fig. 345). *Sea-side Bindweed*. Stem prostrate; leaves kidney-shaped, fleshy; peduncles single flowered, four sided, somewhat winged; bracteas large, ovate, close beneath the calyx.

English Botany, t. 314.—English Flora, vol. i. p. 286.—Hooker, British Flora, vol. i. p. 113.—*Calystegia soldanella*.—Lindley, Synopsis, p. 167.

Root with numerous long creeping branched underground stems. The whole plant smooth and succulent. *Stem* branched, spreading on the surface of the sands, angular, from six to twelve inches long, or longer. *Leaves* alternate, sometimes opposite, roundish, heart or kidney-shaped, pointed, lobed, and obtusely toothed, with a mid-rib and several radiating veins, on a rather long broadish channelled footstalk. *Flowers* solitary from the axis of the leaves, large, very handsome, a delicate rose colour, with a palish yellow ray, nearly two inches across the mouth, and almost as long, on a long square stalk, dilated upwards, the angles more or less distinctly winged, and somewhat pinkish, having two large ovate leafy bractea immediately beneath the calyx, with a mid-rib, and finely reticulated with veins. *Calyx* of five ovate segments, longer than the bractea, with a minute point and pinkish mid-rib. *Corolla* bell-shaped, with five broad plaits, and five somewhat pointed lobes. *Stamens* arising from the base of the corolla, and about half as long, nearly equal; the filaments dilated

downwards, and more or less downy. The *anthers* large, arrow-shaped. *Style* longer than the stamens. *Stigmas* of two ovate downy spreading lobes. *Capsule* roundish, large, of four lobes, single celled, containing generally four large black dotted seeds.

Habitat.—Sandy sea shores; frequent.

Perennial; flowering from June to August.

The flowers only expand in the sunshine, and continue a short time; but there is a continual succession of them for two or three months. It is found on the sandy shore of almost all parts of the European continent; but has not, that we are aware of, been applied to any useful purpose.

GENUS XXI. AZA'LEA.—LINN. *Azalea*.

Nat. Ord. ERI'CEÆ. JUSS.

GEN. CHAR. *Calyx* five-cleft. *Corolla* bell-shaped, regular. *Stamens* straight, inserted at the base of the corolla. *Anthers* bursting longitudinally. *Capsule* two or three valved, two or three celled, dissepiments formed by the inflexed margins of the bifid valves. *Seeds* attached to a central, at length free, receptacle.—Name from *αζαλιος*, *parched*, *dry*; from the plants growing in parched or dry situations.

1. *A. procumb'ens*, Linn. (Fig. 346.) *trailing Azalea*.

English Botany, t. 865.—English Flora, vol. i. p. 283.—Hooker, British Flora, vol. i. p. 113.—Lindley, Synopsis, p. 172.

A low shrubby plant, with long twisted branched dark roots, a much branched and tortuous stem, smooth dark brown scaly bark. The branches short, wiry, and leafy. The leaves rigid, ovate oblong, above dark, smooth, shining, and channelled, the margins reflexed; beneath a pale glaucous green, with a broad pale smooth prominent mid-rib, a continuation of the short broad footstalk, fringed with short hairs. *Inflorescence* small terminal racemes. *Flowers* few, small, rose coloured, on short reddish stalks, each with a small ovate convex bractea at its base. *Calyx* of five, sometimes six, deeply divided oblong fleshy purple segments. *Corolla* somewhat bell-shaped, its limb deeply divided in five oblong obtuse spreading segments, mostly equal. *Stamens* a little shorter than the corolla, with slender filaments inserted at the base of the corolla, into a somewhat fleshy disk at the base of the germen. “*Anthers* of two oval cells, opening distinctly by a longitudinal fissure, lead-coloured germen, upon a fleshy base or disk, scarcely broader than itself, ovate, two or three celled. *Style* about equal to it in length. *Stigma* capitate, obscurely lobed. *Capsule* broadly ovate, with a somewhat spongy coat, purplish brown, opening

by two or three valves, according as the cells are two or three; the margins of the valves entering into the capsules, and thus forming the dissepiments; again each valve is deeply cleft, so that, on looking at the upper half of an open capsule, we find four or six valves or segments, each having one of its sides inflexed, to form (with the introduded side of the neighbouring segment) a dissepiment of a double plate. *Seeds* fixed to two or three lobes of a central, at length (when the valves open) free column or *receptacle*, oval, pale brown, dotted."

Habitat.—Dry moory ground; on most of the mountains in the highlands of Scotland.

Shrub; flowering in May and June.

The anthers of this plant, Smith says, consist of two cells, each cell opening by a rather wide pore, with a blunt border; and that he never found them bursting longitudinally. In our own investigations we do not find this to be the case, but that they burst longitudinally as above described in the words of Sir W. J. Hooker, whose excellent description of them and the capsules we have quoted, and he further remarks, "*A. procumbens* abounds in the Arctic Regions of, I believe, the whole northern hemisphere. It is found in America, as far south as the White Mountains of New Hampshire. My friend, Dr. Boott, gathered it on Mount Washington of that range; and it is extremely plentiful on the highest part of the Rocky Mountains."

GENUS XXII. VERBASCUM.—LINN. *Mullein*.

Nat. Ord. SOLANÆÆ. JUSS.

GEN. CHAR. *Calyx* five parted. *Corolla* wheel-shaped, of five unequal segments. *Filaments* declining, mostly hairy. *Capsule* ovate or globose, with two cells and two valves.—Name supposed to be from *Barbascum* (*Quasi barbascum*), from *Barba*, a beard, in allusion to the hairy foliage of most of the species.

1. *V. Thapsus*, Linn. (Fig. 347). *Great Mullein*, *High Taper*. Leaves decurrent, crenated, ovate-lanceolate, woolly on both sides; stem simple, raceme spiked, very dense, flowers with two stamens longer than the others, and smooth.

English Botany, t. 549.—English Flora, vol. i. p. 309.—Hooker, British Flora, vol. i. p. 111.—Lindley, Synopsis, p. 181.

Root long, tapering. *Stem* erect, simple, from three to six feet high, sometimes, but very rarely, branched, round, or slightly angular, densely woolly, like all the rest of the plant, with very soft curiously

branched pale yellowish hairs. *Leaves* numerous, alternate, crowding the stem, all decurrent, densely dotted on both sides the margins, more or less distinctly crenated, with a strong mid-rib and lateral branched veins, the lower on footstalks, often a foot long, ovate oblong, tapering at the base, the upper sessile, strongly decurrent at the base, forming wings to the stem, oblong-lanceolate in the lower part of the stem, with an acute point in the upper tapering. *Inflorescence* a much crowded racemose spike, cylindrical, from one to two feet long. *Flowers* large, handsome, golden yellow, gradually expanding from the base upwards, and by their continual succession, are a considerable time in flower, some are sessile, others on short stalks, each with a narrow ovate-lanceolate *Bractea* as long as the calyx, woolly on the outside, mostly smooth and pale on the inside. *Calyx* of five deep lanceolate segments, the one next the stem narrower than the others, pale, smooth, and shining, on the inner surface. *Corolla* wheel-shaped, with a short *tube*, sometimes the tube is longer, and approaches funnel shape. The *limb* spreading, of five unequal rounded lobes, woolly on the outside, smooth and veiny within. *Stamens* inserted into the tube of the corolla, two of them with long slender filaments, quite smooth, or with a few hairs, the others with much shorter and very hairy filaments. *Anthers* bright orange, those on the two long *filaments* much larger than the others. *Style* nearly as long as the corolla, hairy below, swollen upwards. *Stigma* obtuse, green. *Capsule* surrounded by the persistent calyx, ovate, compressed, furrowed on each side, downy, with two cells, opening with two valves. *Seeds* very numerous, angular, compressed, beautifully dotted, attached to a placenta formed by the dissepiments.

Habitat.—Fields, banks, and road sides; frequent, especially in a light sandy soil.

Biennial; flowering from June to August.

This large conspicuous plant has, no doubt, obtruded itself on the notice of, and is known by many persons who are mere admirers of flowers: but those who explore with more than with a general eye this vast field of investigation, will find in this plant much that is worthy of minute examination. The hairs with which almost the whole plant is so abundantly clothed, are very delicate, and of exquisite structure, branched and stellated in a remarkable manner. The unequal stamens with their different filaments, and variously formed anthers: the capsule and the beautiful seeds, are all parts whose use and curious structures will afford much interest in their examination, and the offices they perform in the economy of the plant.

The flowers, "when dried in the sun give out a kind of fatty matter, used in Alsace as a cataplasm in hæmorrhoidal complaints." The



345

Convolvulus soldanella.



346

Azalia procumbens.



347

Verbascum thapsus.



348

Verbascum thapsiforme.



349

Verbascum lychnitis.



350

Verbascum floccosum.

whole plant is said to be emollient and mucilaginous. The flowers are made into an infusion or decoction in some parts of Italy, an ounce and a half to a pint of water, and is said to be useful for a cough, inflamed bowels, diseases of the kidneys and bladder, and is used as an injection to allay tenesmus. It was also used by the Italian ladies as a cosmetic to remove spots from the skin, and it was quite as useful as many of the now more fashionable and expensive compounds that is sold for the same purpose.

2. "*V. thapsiforme*, (Fig. 348.) Schrad. *Thapsus*-like *Mullein*. Stem simple, leaves lanceolate-ovate, decurrent, crenulate, downy, the upper acuminate, raceme spiked, dense; bractea longer than the woolly calyx; segments of the corolla obovate rounded, two anthers oblong."—*De Cand.*

Lindley, Synopsis, p. 181.—Hooker, British Flora, vol. i. p. 111.

Habitat.—"By-road sides in Kent."

"Biennial; flowering in July and August."

This plant we are unacquainted with as a native of Britain; it is not unfrequent on the continent, but we are disposed to consider it rather as a variety of *V. Thapsus* than a distinct species.

3. *V. Lich'nitis*, Linn. (Fig. 349.) *white Mullein*. Leaves oblong, wedge-shaped above, the lower ovate oblong, on footstalks, nearly smooth on the upper side, woolly beneath, crenated, stem angular and panicled.

English Botany, t. 58.—English Flora, vol. i. p. 310.—Hooker, British Flora, vol. i. p. 111.—Lindley, Synopsis, p. 181.

Root tapering. *Stem* from two to four feet high, erect, somewhat angular, branched at the top, clothed with short close woolly hairs. *Leaves* numerous, smooth on the upper side, or slightly scattered over with hairs, beneath thickly clothed with short yellowish wool, with a strong mid-rib, and numerous branched reticulated veins, the margins crenated, the lower ones ovate-oblong, contracted upwards, and tapering at the base into a footstalk, becoming more lanceolate as they advance upwards, and the footstalks shorter, until at length they are sessile, ovate-lanceolate, with a more or less acute or tapering point. *Inflorescence* a branched paniculated raceme, its branches erect, scarcely spreading, angular and woolly, densely crowded with white flowers, some on a short footstalk, others sessile. *Bractea* small, lanceolate, smooth within. *Calyx* of five narrow lanceolate woolly segments, one shorter and rather narrower than the others. *Corolla* with a short tube, wheel-shaped, the limb of five spreading oblong acute veiny segments, woolly on the outside, smooth within. *Stamens* with short white woolly inflexed filaments, nearly equal in length, inserted into the tube of the corolla, rather small, orange-coloured. *Anthers* yellow, all similar in size. *Style* slender, hairy below, smooth, and swelling upwards, nearly as long as the corolla, with an obtuse

stigma. Capsule ovate, somewhat compressed, furrowed on each side, woolly, of two cells, opening with two valves, surrounded with the persistent calyx. Seeds numerous, small, brown, angular, dotted.

Habitat.—Pastures, road sides, and waste places, especially on a chalky soil.

Biennial; flowering in July and August.

4. *V. floccosum*, Waldst et Kit. (*pl. rar. hung.*) (Fig. 350.) yellow hoary Mullein. Lower leaves ovate oblong, on footstalks, the upper ones sessile, ovate-lanceolate.

V. pulverulentum, Vill.—English Botany, t. 487.—English Flora, vol. i. p. 311.—Hooker, British Flora, vol. i. p. 112.—Lindley, Synopsis, p. 181.

Root tapering, sometimes divided and branched. The whole plant clothed with a soft thick powdery woolliness, having a unctuous feel when rubbed between the fingers, easily rubbed from the plant. *Stem* from three to six feet high, erect, stout, much branched, round, or sometimes obscurely angular. *Leaves* numerous, more or less distinctly crenated on the margin, with a strong mid-rib, and numerous branched reticulated veins, above sparingly, but beneath densely clothed with woolliness, the lower and radicle leaves ovate oblong, attenuated into a footstalk of variable length, large, often a foot long, becoming gradually smaller up the stem, with a shorter footstalk, until they are sessile and lanceolate, often with a tapering point. *Inflorescence* a large branched paniculated raceme, the branches round, erect, and disposed in a pyramidal form, from two to three feet long. *Flowers* very numerous, crowded, rather large, bright yellow, very handsome, some sessile, others on short footstalks, in crowded alternate tufts, very woolly. *Bractea* cordate lanceolate, the upper ones very small. *Calyx* in five lanceolate somewhat unequal segments. *Corolla* in five oblong ovate spreading segments, with a short tube, woolly externally. *Stamens* nearly equal, the filaments clothed with pale yellow or white woolliness. *Anthers* all similar in size, scarlet. *Style* about as long as the corolla, slender, somewhat hairy below, smooth and thickened upwards. *Stigma* obtuse. *Capsule* woolly, ovate, slightly compressed, scarcely furrowed on each side, surrounded by the persistent calyx, of two cells, opening with two valves. *Seeds* small, numerous, brown, angular, dotted.

Habitat.—Banks, road sides, and the borders of fields, in a gravelly or chalky soil; frequent in Norfolk and Suffolk, Nottinghamshire, Den, near Cullen, and about Stirling, Scotland.

Biennial; flowering in July and August.

A curious instance of the irritability of this plant is mentioned by Smith; he says, if the stem be smartly struck three or four times with a stick, all the flowers then open will in a few minutes throw off their

corolla, the calyx closing round the germen, so that after eight or ten minutes none will remain on the plant.

It is one of the most magnificent of our native plants; its large panicle of golden-coloured flowers, with their fringed filaments and scarlet anthers, crowding round the stems for a foot or more long, forms a large pyramid of shining gems, not surpassed, if equalled, by any of the genus. It is admirably calculated for ornamental bushy rock work in pleasure grounds, and two or three plants growing together, have a most splendid appearance; it is also very handsome on borders, especially between and amongst low young shrubs, but is not so well standing alone, without other lower plants about it. The hairs on the stems and leaves, examined by the microscope, are seen beautifully and delicately branched in a stellated manner, like slender stars of highly polished silver.

5. *V. pulverulentum*, Vill. *powdery-leaved Mullein*. Lower leaves ovate oblong, on short footstalks, the upper ones sessile, with an acuminate point, slightly powdery above, beneath densely woolly, subcrenate, stem round, branches of the panicle obtusely angular.

V. nigro-pulverulentum.—Fl. Br. Var. β .—English Flora, vol. i. p. 311.

This species has the general aspect of *V. floccosum*; its leaves, however, are more distinctly crenate, the upper ones with a more acuminate point, the lower ones on longer footstalks, and the upper side of the leaf is less clothed with woolliness, but the under side is densely covered; the stem is round below, but above and the branches of the panicle are obtusely angular, patent, and the hairs of the stamens are somewhat purple, or white, in other respects it is the same as *V. floccosum*.

Habitat.—Road sides and stony places; "near Norwich, and various parts of Norfolk;" about Yarmouth; not unfrequent.

Biennial; flowering in July and August.

How far this may be found a distinct species, we are at present unable to determine; it is readily distinguished from the former, and would appear, from its characters, to be an hybrid between *V. floccosum* and *V. Lychnitis*, or an intermediate species. We have found it in Germany and Italy, a circumstance which favours its being a distinct species, independent of hybrids in plants being of very rare occurrence.

6. *V. nigrum*, Linn. (Fig. 351.) *dark Mullein*. Leaves on footstalks, oblong, heart-shaped, crenate, nearly smooth above, slightly downy beneath.

English Botany, t. 59.—English Flora, vol. i. p. 312.—Hooker, British Flora, vol. i. p. 112.—Lindley, Synopsis, p. 181.

β. ovatum. The lower leaves ovate, or ovate oblong, contracted at each end, scarcely cordate at the base, petiolated.—*Verbascum nigro-Lychnitis.*—Schröd.

A variety sometimes found, especially in a dry situation.

Root tapering. *Stem* simple, from two to four feet high, slightly angular, purplish, smooth below, above scattered over with a short soft woolliness; leafy. *Leaves* green above, and smooth or slightly scattered over with down, beneath pale and woolly, the margins sometimes waved, simply or doubly crenated, with a prominent mid-rib beneath, with branched reticulated veins, oblong, heart-shaped, the radical ones large, sometimes a foot long, on long channelled footstalks, the upper ones smaller, cordate lanceolate, with a gradually shorter stalk, the upper ones nearly sessile. *Inflorescence* a simple rarely branched racemose spike, of numerous crowded flowers, some sessile, others on a short stalk in alternate clusters, of a bright yellow colour. *Bractea* narrow, linear, long, downy. *Calyx* of five linear, nearly equal, somewhat downy segments. *Corolla* rather small, wheel-shaped, with a short tube. The *limb* of five ovate obtuse spreading segments, downy on the outside, smooth within. *Stamens* nearly equal, the *filaments* densely clothed with purple down. *Anthers* equal, dark orange colour, or purple. *Style* nearly as long as the corolla, hairy below, smooth and thickened upwards. *Stigma* obtuse. *Capsule* ovate, somewhat compressed, downy, surrounded by the persistent calyx, of two cells, opening with two valves. *Seeds* numerous, angular, small.

Habitat.—Banks, road sides, and waste places, especially in a gravelly or chalky soil, but not common; rare in Scotland; near Boglehill, east of Cockenzie.—*Mr. Neill.* Links between Seaton and Gosford.—*Dr. Yule.* Banks of the river Esk, opposite Coal-pits, and at Brothwick Castle.—*Mr. Maugham.* Not known in Ireland.

Perennial; flowering in July and August.

This is a striking and beautiful plant, readily distinguished from the other species. It is said to possess narcotic properties, and to be one of the plants used by poachers to intoxicate fish, for the purpose of capturing them. The whole plant is mildly astringent, said to be useful in a weakened state of the bowels; and Galen says that a decoction of it is useful as a wash for the mouth, in pains of the teeth and gums.

7. *V. virga'tum*, With. (Fig. 352.) large-flowered Primrose-leaved Mullein. Leaves ovate-lanceolate, toothed, sessile, partly decurrent, the radical ones downy, somewhat lyrate, stem erect, branched, flowers in long racemes of small alternate clusters, nearly sessile.

English Botany, t. 550.—English Flora, vol. i. p. 312.—Hooker, British Flora, vol. i. p. 112.—Lindley, Synopsis, p. 181.

Root of thick tapering fleshy branches. *Stem* from five to six feet



351

Verbascum nigrum.



352

Verbascum virgatum.



353

V. blattaria.



354

Datura stramonium.



355

Hyoscyamus niger.



356

Atropa belladonna.

high, or more, stout, round, or slightly angular, mostly much branched from the bottom upwards, smooth, or somewhat downy, leafy, and partially winged from the more or less decurrent leaves. *Leaves* variable, the lower ones large, much resembling those of the Primrose, more or less lyrate, sometimes eroded, doubly toothed or serrated, those on the lower part of the stem oblong lanceolate, doubly toothed gradually towards the top of the stem, and at length heart-shaped, taper-pointed, and simply serrated or toothed, clasping the stem, and more or less decurrent, the upper ones are generally smooth, the lower more or less profusely scattered over with stellated, sometimes glandular hairs, all a palish green, with a strong mid-rib, and numerous branched reticulated veins. *Inflorescence* long, simple or branched racemose spikes terminating the stem and branches. *Flowers* large, bright yellow, in lateral clusters, of from one or two on the top of the stem, to about six arising from the axis of a heart-shaped lanceolate, *bractea* gradually becoming smaller, some of the flowers nearly sessile, others on a stalk as long as the calyx, hairy and elongating after flowering. *Calyx* of five nearly equal lanceolate viscid segments, persistent enlarging and enveloping the capsule. *Corolla* wheel-shaped, rather large, bright yellow, of five ovate spreading nearly equal segments, downy on the outside, smooth and veiny within. *Stamens* unequal, two with long slender filaments, less thickly clothed with purple down, and bearing larger curved *anthers* than the others. *Style* about the length of the corolla, slender, somewhat hairy at the base, thickened upwards. *Stigma* obtuse. *Capsule* globose, somewhat hairy, and scarcely furrowed on each side, of two cells, opening with two valves. *Seeds* numerous, small, angular.

Habitat.—Fields and road sides; rare. Fields near Wrexham.—*Mrs. Nash*. Near Plymouth.—*Mr. Banks*. Near Lincoln.—*Mr. Nicholson*. On the College grounds, at West Green-lane, near Kenmare, in Ireland.

Biennial; flowering in July and August.

This is nearly allied to the following species, and we are disposed to think that the Lincoln station given for this plant belongs to the following, which we have collected there: we have received dry specimens from the same quarter, named *V. virgatum*, which are undoubtedly *V. Blattaria*.

8. *V. Blattaria*, Linn. (Fig. 353.) *Moth Mullein*. Leaves smooth, oblong, acute, subcordate at the base, embracing the stem, crenate, the radicle ones ovate oblong, attenuated at the base, sinuated; stem erect, branched; flowers in a long raceme, solitary, on a footstalk half as long again as the bractea.

English Botany, t. 393.—English Flora, vol. i. p. 313.—Hooker, British Flora, vol. i. p. 112.—Lindley, Synopsis, p. 181.

Root tapering. *Stem* erect, smooth, roundish, or obtusely angular, three or four feet high, branched upwards, leafy. *Leaves* smooth, variable, those from the root and lower part of the stem ovate oblong, acute at the point, but tapering at the base, and sometimes with a short footstalk, the margin sinuated and crenated in an irregular manner, often nearly a foot long, becoming, as they advance up the stem, smaller, less sinuated until simply crenated, smaller, oblong, with an acute point, the upper ones more or less deeply heart-shaped at the base, clasping the stem, and sometimes scattered over with glandular hairs, the whole rather a dark shining green, with a strong mid-rib, and branched lateral veins. *Inflorescence* a simple raceme terminating the stem and slender branches, which are more or less profusely scattered over with glandular hairs. *Flowers* rather large, solitary, or sometimes in pairs, on a rather long flower stalk, scattered over like the bractea and calyx with glandular hairs. *Bractea* ovate-lanceolate, shorter than the flower stalk. *Calyx* of five nearly equal lanceolate segments. *Corolla* in five ovate spreading segments, the margin often waved, a dark yellowish brown externally, sometimes slightly hairy, bright yellow within, and more or less marked with purple at the base. *Stamens* unequal, two longer than the others, with larger recurved anthers, the upper part of the *filaments* smooth, naked, but the lower part like the whole length of the others, thickly clothed with longish purple hairs. *Style* nearly as long as the corolla, slender, or slightly hairy at the base, smooth, mostly thickened upwards. *Stigma* obtuse. *Capsule* globose, smooth, or thinly scattered over with glandular hairs, slightly furrowed on each side, surrounded by the persistent calyx, having two cells, opening with two valves, and containing numerous small angular seeds.

Habitat.—Fields and banks, in a gravelly soil, but rare; at Cobham, and several other places in Kent; not uncommon in Devonshire and Cornwall; near Plymouth.—*Mr. Banks*. Found in several places about Lincoln.—*R. D.*

Annual; flowering from July to September.

This beautiful species is frequently cultivated in gardens, and is highly ornamental; commences flowering in June, and continues to produce a succession of its flowers the remainder of the summer, and even in the autumn, when grown in a shaded situation. A variety with white flowers is not unfrequently produced by cultivation, which is remarkably delicate and beautiful.

The leaves and tender branches of this plant are said to be destructive to the *Cockroach* (*Blatta orientalis*), and from this circumstance the Romans called it *Blattaria*, the specific name by which it is now distinguished. If it still retains this reputed virtue, its use may be very great to the inhabitants of houses infested by this troublesome insect; and in the stores and warehouses it may be scattered about

without danger of any ill effects arising from it, as is often the case in using many of the poisons for that purpose. The Cockroach is well known, by its deep brown colour, flat body, small head, almost concealed by the thorax, having long slender antennæ, and spinous legs, the elytra and wings shorter than the body; the female is without wings. They hide themselves during the day in crevices, &c. the females secreting a peculiar cellular substance, in which she deposits her eggs. They come out at night, and being very voracious, are particularly destructive in kitchens, mills, granaries, and ships' stores, especially the *B. gigantea*. They are said to have been originally brought from the Levant, but are now common in all parts of Europe.

GENUS XXIII. DATURA.—LINN. *Thorn-apple*.

Nat. Ord. SOLANÆÆ. JUSS.

GEN. CHAR. *Calyx* tubular, with five angles and five teeth, falling away, leaving a broad persistent orbicular base. *Corolla* funnel-shaped, with a long tube, the limb plaited, five angled and five lobed. *Stigma* of two plates. *Capsule* spinous or smooth, four celled, frequently with imperfect dissepiments, four valves, and many seeded.—Named, it is supposed, from the Indian word *datiro*.

1 *D. Stramo'nium*, Linn. (Fig. 354.) common *Thorn-apple*. Herbaceous, leaves ovate, angular, and sinuated, smooth; fruit ovate, erect, clothed with numerous spines.

English Botany, t. 1288.—English Flora, vol. i. p. 314.—Hooker, British Flora, vol. i. p. 110.—Lindley, Synopsis, p. 180.

Root tapering. The whole plant smooth, from one to three feet high. *Stem* round, much branched, and spreading leafy. *Leaves* on foot-stalks, ovate, variously angular, acutely sinuated and toothed, large, smooth, shining, of a dullish green, with a mid-rib, and numerous lateral branched veins. *Flowers* solitary from the axis of the stem or leaves, on a short stalk, elongating, nearly as long again after flowering. *Calyx* oblong, tubular, swelling upwards, with five angles and five lanceolate teeth, thickened at the base, where it separates in a circular manner after flowering, which forms a fleshy reflexed persistent rim around the base of the capsule. *Corolla* white, funnel-shaped, the tube half as long again as the calyx, cylindrical, the limb spreading, with five folds and five angles, each forming a mid-rib to the five waved pointed lobes. *Stamens* as long as the tube, and united to it in their lower half. *Style* as long as the stamens. *Stigma* of two obtuse plates. *Capsule* ovate, or roundish, thickly clothed with smooth spines,

four valved and four celled, two of which are generally only divided half way by their dissepiments, hence though four celled in the lower part, it is only two in the upper. *Seeds* numerous, flattish, kidney shape, and dotted.

Habitat.—Waste ground, especially in the vicinity of gardens.

Annual; flowering in July.

This is a naturalised plant, now found in almost all parts of England, and was probably introduced from America, and ought not to be admitted into the British Flora; but since it is so commonly found, and a plant of importance to be known, we have given it a place here.

The whole plant is narcotic and stimulent, with a foetid unpleasant odour, frequently in a very short time producing head-ache in some people, and has a bitter nauseous taste. The narcotic principle which it contains, according to the analysis of M. Brandes, resides in a peculiar alkaline salt, which he has named *Daturine*. The effects which the plant of this genus have upon the system are variously stated by authors, and many strange tales have been told of the use made of it by the savages of the Asiatic Islands, and people of more civilised nations, previous to the committal of various atrocious crimes.

D. Stramonium is called by the Americans the Devil's Apple, or the Jamestown weed, from the circumstance of its being there found so extremely abundant, and producing upon the new settlers, when eaten, such extraordinary effects. Beverly's account of it, in his History of Virginia, is somewhat amusing. He says, "the Jamestown weed, which resembles the thorn apple of Peru, is supposed to be one of the greatest coolers in the world. This being an early plant, was gathered very young for a boiled salad by some of the soldiers sent thither to quell the rebellion of Bacon, and some of them ate plentifully of it, the effect of which was a very pleasant comedy, for they turned natural fools upon it for several days. One would blow up a feather into the air; another would dart straws at it with much fury; another (stark naked) was seen setting up in a corner like a monkey, grinding and making mouths; a fourth would fondly kiss and paw his companions, and sneer in their faces, with a countenance more antic than any in a Dutch droll. In this frantic condition they were confined, lest in their folly they should destroy themselves. A thousand simple tricks they played, but after eleven days returned to themselves again, not remembering any thing that had passed."

Numerous cases are on record of the narcotic properties of *stramonium*, and it is even said to be used by the Turks instead of opium, and that the Chinese infuse the seeds in beer. It has been recommended in cases of mania and epilepsy, but its beneficial effects are very doubtful, from the reported trials that have been made with it. Dr. Barton, of America, regards it as a remedy of great efficacy, and has reported

several cases; he mentions that of a child suddenly seized with idiocy, without fever. The pulse, he says, was natural, the tongue clean, and no internal function disturbed, excepting that of the brain. The boy appeared very happy, talking, laughing, and in constant motion; yet so weak, he could not stand or walk without tottering. An emetic was administered, some seeds of the Stramonium were vomited up, and the child shortly after recovered. Dr. Fowler also has related the case of a little girl, who took a drachm and a half of the seeds. In less than two hours she was attacked with maniacal delirium, accompanied with spectral illusions, and she remained in this state most of the following night, but had some intervals of lethargic sleep. Next morning, after the operation of a laxative, she fell fast asleep, and awoke after some hours quite well. The seeds have been sometimes taken in mistake, and at others administered designedly, sometimes producing death; but the symptoms produced when taken in poisonous doses appear very variable. There is generally great delirium, dilatation of the pupils, and stupor; sometimes there are spasms, and palsy also occasionally occurs. Blood-letting, emetics, and purgatives, are the remedies found to give relief, but bleeding seems to be particularly called for, from the symptoms of determination of blood to the head.

The deleterious effects of this plant have also been produced by the application of the leaves to the skin, when deprived of its cuticle, as in the cases of burns.

A poultice of the bruised leaves has been found an useful application to inflammatory tumours, and an ointment made of the leaves is said to be useful in hæmorrhoides; and the extract in doses of half a grain, gradually increased to ten, twice a day, is said to have given great relief in severe chronic pains; its use requires, however, great caution. The dried leaves smoked in the manner of tobacco at one time obtained for it great reputation in relieving the paroxysm of spasmodic asthma, a practice introduced into England from Ceylon; it has been, however, found so often to fail in its beneficial effects, as to have lost much of its fame.

As a garden flower it is not much admired; it is too spreading, and but little ornamental. The flowers have a pleasant fragrance, especially at night, but it is not now much cultivated.

GENUS XXIV. HYOSCYAMUS.—LINN. *Henbane.*

Nat. Ord. SOLAN'EÆ. JUSS.

GEN. CHAR. *Calyx* tubular, five-cleft, persistent. *Corolla* funnel-

shaped; the *limb* oblique, somewhat unequal, five lobed. *Capsule* ovate, furrowed on each side, swelled at the base, contracted above, and opening with a transverse aperture. *Seeds* numerous. —Named from *υς*, *vos*, a *Hog*; and *ηυαμος*, a *bean*; so named because its fruit bears some resemblance to a bean, and hogs are said to eat it as a medicine.

1. *H. ni'ger*, Linn. (Fig. 355.) common *Henbane*. Leaves ovate-oblong, sinuated, amplexicaul above, petiolated below; flowers nearly sessile.

English Botany, t. 591.—English Flora, vol. i. p. 316.—Hooker, British Flora, vol. i. p. 110.—Lindley, Synopsis, p. 181.

Root tapering. Whole plant more or less profusely clothed with soft viscid hairs, and of a fetid odour. *Stem* from one to two feet high, round, simple, or branched, very leafy; the lower leaves on short footstalks, the upper sessile and embracing the stem, large, alternate, ovate-oblong, pinnatifid, or deeply sinuated with a broad mid-rib, and small lateral veins, mostly very hairy. *Inflorescence* a terminal leafy recurved raceme. *Flowers* on short stalks from the axis of the floral leaves, numerous, but only a few blown at one time. *Calyx* tubular, swelling below, veined with dark purplish veins, the *limb* five cleft. *Corolla* funnel-shaped, the *tube* short, cylindrical, the *limb* five lobed, deeply divided, one segment broader than the rest, a pale sulphur colour, beautifully pencilled with dark purple veins. *Stamens* inserted into the tube of the corolla, of unequal lengths. *Anthers* purpleish. *Capsule* ovate, somewhat compressed with a longitudinal furrow on each side, closely enveloped with the enlarged tube of the calyx, bellying below, contracted into a neck above, which falls off transversely like a lid, and exposes the two cells within. *Seeds* numerous, obovate, dotted, abounding with oil.

Habitat.—Waste rubbishy places, especially in a chalky or limestone soil; not uncommon.

Annual; flowering in June and July.

Henbane is a narcotic plant, and when it is taken in any considerable quantity is, like opium, quickly poisonous to man and most animals. Swine are said to eat it with impunity; hence it has in some places the name of Hog-weed, but if they eat it in too great a quantity, it proves also poisonous to them. On a village green, near Worksop, Nottinghamshire, this plant used to grow abundantly, and was called by the villagers Hog-weed, from the pigs eating it when no other animals would; but a number of these pigs occasionally dying from eating too much of this plant, they took the means of further preventing their loss, by destroying every year all the plants they could meet with; now scarcely one is to be met with, and the apothecary is obliged to seek elsewhere for his supply of this medicine. Goats and sheep will eat it, but very sparingly.

The whole plant is poisonous, with the exception, according to Smith, of the seeds, which abound in oil, and he says he has eaten them with impunity when a youth. This appears, however, from the accounts of some authors, to want confirmation, and that they are poisonous, but in a diminished degree. Dr. Archibald Hamilton has described (in the *Edin. Phys. and Lit. Essays*, vol. ii. p. 268.) the case of a young medical student, who took about twenty-five grains of the seeds, he was seized in half an hour with lassitude and somnolency, and successively with dryness of the throat, impeding deglutition, convulsive movements of the arms, incoherency, total insensibility of the skin, and loss of recollection. These symptoms continued about twelve hours, and then slowly receded. From which it will seem that the seeds are not to be taken with impunity, but are dangerous, as the rest of the plant. Other cases of a similar result are on record, and we find in *Pyl's Magazine* the case of two boys, a few minutes after eating the seeds, were attacked with convulsions and heat in the throat; one of them, who could not be made to vomit, died in the course of twelve hours. The seeds and capsules smoked like tobacco, are a favourite remedy with some people for the cure of the tooth-ache; but if relief is to be obtained by this means, the leaves will be found better to answer the purpose. The roots are equally as poisonous as the rest of the plant; Orfila, indeed, says they are more so, but vary in their activity at different seasons of the year. Mr. Wilmer, in his *Treatise on the Poisonous Vegetables of Great Britain*, has given an account of six persons of one family who were poisoned by eating the cooked roots for dinner of hyoscyamus, by mistake for those of parsnips. Some of them were delirious, and danced about the room like maniacs; one had the appearance of being drunk, and one woman became profoundly and irrecoverably comatose. Emetics could not be swallowed, stimulating injections had no effect, the application of various external stimulants failed to rouse her, and she expired the following morning.

The symptoms produced by an over dose of the plant, are giddiness and stupour, insensible eye, and dilated pupil, difficulty of breathing, frequently locked jaw and distorted features, the pulse small and intermittent, with coldness and palsy of the extremities. Emptying the stomach of its contents, either by means of the stomach pump, or by emetics, afterwards administering purgatives, and laxative injections, and giving the patient vinegar and water, are the means found to give relief, and restoration speedily follows.

Medicinally henbane is used either in the form of extract or tincture, and in doses of from two to six grains of the former, and from twenty to sixty drops of the latter, usually inducing pleasant sleep, and may be administered in all cases where opium is indicated, frequently producing the desired effect, without the unpleasantness which opium

causes in dreams and disturbed sleep; and at the same time it does not constipate the bowels, but rather acts as a laxative. Externally the leaves are used in the form of fomentations, to diminish the pain and irritation of inflamed parts in gout and rheumatism, but with much greater advantage to scrofulous and cancerous ulcerations, and inflamed hæmorrhoids. The tincture is frequently an useful application to strumous or chronic inflammations of the conjunctiva; it has also the effect of contracting the pupil, but is much less powerful than belladonna for that purpose.

The active principle of the plant resides, according to the investigations of M. Brande, in a peculiar alkaline salt, which he has named *Hyosciamia*, which crystallizes in long prisms, and forms neutral salts with the acids.

The plant by cultivation seems to loose in its active properties, and the flowers become much paler. Wild specimens are also sometimes found quite pale, with indistinctly coloured veins, and is the variety *β. pallidus*.

GENUS XXV. ATRO'PA.—LINN. *Dwale*.

Nat. Ord. SOLAN'EÆ. JUSS.

GEN. CHAR. *Calyx* bell-shaped, five cleft. *Corolla* bell-shaped, with five equal lobes. *Stamens* distant. *Berry* within the calyx, globose, two celled.—Name from *Atropa*, one of the three fatal sisters who cut the thread of life, in allusion to the fatal effects of the plant upon those who are subjected to its influence.

1. *A. Belladonna*, Linn. (Fig. 356). *common Dwale, or Deadly Night-shade*. Stem herbaceous; leaves ovate, entire; flowers axillary, on short peduncles.

English Botany, t. 592.—English Flora, vol. i. p. 317.—Hooker, British Flora, vol. i. p. 111.—Lindley, Synopsis, p. 182.

Root thick, fleshy, whitish. Whole plant of a dark lurid aspect, and of a fœtid unpleasant odour when bruised. *Stem* round, smooth, much branched, from two to four feet high, herbaceous, somewhat downy above. *Leaves* numerous, mostly opposite, one generally smaller than the other, large, ovate, acute, entire, smooth, with a mid-rib, and numerous lateral veins, on footstalks. *Flowers* solitary from the axis of the upper leaves, drooping on short stalks, of a dark lurid purple colour. *Calyx* bell-shaped, five cleft, smooth, or covered over with short close down. *Corolla* bell-shaped, about three times as long as the calyx, with a short tube, five cleft at the extremity, the segments spreading, acute, veiny. *Stamens* inserted into the tube of the corolla.

Filaments thread-shaped, curved within the corolla, hairy at the base around the mouth of the tube. *Anthers* heart-shaped, yellow. *Style* longer than the corolla. *Stigma* large, capitate. *Fruit* a shining violet black berry, as large as a cherry, inclosed within the calyx, globular, with a furrow on each side, two celled, with numerous small kidney-shaped *seeds* attached to the placenta, in the middle of the disseppiments.

Habitat.—Hedges and waste places, especially amongst ruins in a calcarious district; not very common.

Perennial; flowering in June and July.

Dwale, or Deadly Night-shade, is one of the most poisonous of our native plants; it was called by the ancients *Solanum lethale*, *manicum*, or *furiosum*, all names expressive of the powers which the plant possesses. Its present specific name *bella-donna* (beautiful lady) refers to the use that the Italian ladies made of the berries, as a cosmetic to beautify the appearance of the skin, but we cannot learn that it is used now by them for that purpose.

Numerous cases are on record of the poisonous effects of this plant when taken by mistake for some other, or administered designedly, producing pain in the head, restlessness, dimness of vision, dilatation of the pupils, and subsequent loss of sight, dryness of the throat, delirium, coma, and sometimes convulsions. The delirium is not always present, and is mostly of the pleasing kind, with constant and immoderate laughter, talking continually, but generally on lively subjects. The muscles of the eyeballs are sometimes spasmodically contracted, as well as the muscles of deglutition, especially when any thing is attempted to be swallowed. At other times the effect produced resembles somnambulism, as occurred in the instance of a tailor, who was poisoned with an injection of the infusion of *bella-donna*, and who for fifteen hours, though speechless and insensible to external objects, went through all the usual operations of his trade with much vivacity, and moved his lips as if in conversation. Bloody stools, and aphthous ulcerations of the throat and mouth, are mentioned as being sometimes present, and also violent stranguary, with suppression of urine and bloody micturition.

The most frequent cases of accidental poisoning of this plant are from children being tempted to eat the black shining cherry-like fruit, which is sweetish, without any unpleasant odour. It is said that in some cases even half a berry has proved fatal; but an instance is related by M. Gigault, a French physician, of a young man who took a pound of the berries before going to bed, and was not subjected to treatment until the next morning, when he was found in a state of delirium, but soon recovered after the operation of emetics and purgatives; indeed, fatal results now seldom occur from the accidental

taking of this plant, for as delirium comes on some time before the state of stupor ensues, suspicion is excited, and the stomach may be emptied either by means of the stomach pump, or emetics, before the poisonous quality has been absorbed in sufficient quantity to prove fatal. After this has been done, the bowels ought to be cleared by active purgatives, assisted by laxative injections. The drinking of vegetable acids as vinegar, is also said to be useful.

As a poison this plant appears to have been long known, and used for treacherous purposes. Buchanan, the Scottish historian, relates that the Scotch, under the command of Macbeth, owed their victory over the Danes to their having given to the troops of Sweno, during a truce, bread and a drink of ale and wine, in which was mixed the poison of this plant. After very accurately describing the botanical character of the plant, he adds, "*vis fructui, radici, ac maxime semini somnifera et quæ in amentiam, si largius sumantur, agat.*" This remarkable circumstance appears not to have escaped the observation of Shakspeare, for Banquo in his speech says, "Or have we eaten of the insane root that takes the reason prisoner?" It is supposed to have been known even long before this period, for Plutarch in his account of the Parthian war, when speaking of the want of provisions by the soldiers of Mark Anthony, says, "Those who sought for herbs obtained few that they had been accustomed to eat, and in tasting unknown herbs they found one that brought on madness and death. He that had eaten of it immediately lost all memory and knowledge, but at the same time would busy himself in turning and moving every stone he met with, as if he was upon some very important pursuit. The camp was full of unhappy men, bending to the ground, and thus digging up and removing stones, till at last they were carried off by bilious vomiting, when wine, the only remedy, was not to be found."

Medicinally, bella-donna is used in the form of extract and tincture; it is powerfully narcotic, and is said to have been found of use in obstinate intermittents, chronic rheumatism, gout, paralysis, amaurosis, epilepsy, and pertussis, as well as relieving painful neuralgic affections. Its internal administration, however, requires much caution; applied externally we have seen it extremely useful in the form of a plaster, combined with soap cerate, in relieving whooping cough; also applied in the form of ointment to painful, irritated scirrhus ulcers. The extract smeared round the eye, or the tincture dropped into it, is well known as shortly producing dilatation of the pupil, and is of the greatest use previous to the performing certain operations on the eye, and in some diseases of the iris, upon the radiated fibres of which, observes Mr. Adams, its operation seems to be limited.

Bella-donna appears, from experiments that have been made, to have the power of protecting individuals to whom it is administered from the infection of scarlet fever, during the prevalence of that con-

tagious disorder. It should at first be administered in small doses, gradually and cautiously increasing it.

GENUS XXVI. SOLA'NUM.—LINN. *Night-shade.*

Nat. Ord. SOLAN'Æ: JUSA.

GEN. CHAR. *Calyx* five or ten partite. *Corolla* wheel-shaped. *Anthers* connivent, oblong, opening with two pores at the extremity. *Berry* roundish, two or more celled.—Name thought to be derived from *solor*, to *comfort*, on account of the medicinal properties of some of the species.

1. *S. Dulcam'ara*, Linn. (Fig. 357.) *Woody Night-shade, or Bittersweet.* Stem shrubly, flexuous, climbing, leaves ovate, cordate, upper ones hastate, corymbs drooping, inserted opposite the leaves.

English Botany, t. 565.—English Flora, vol. i. p. 318.—Hooker, British Flora, vol. i. p. 111.—Lindley, Synopsis, p. 182.

Root woody, of numerous long slender branches, and tufts of branched fibres. *Stem* woody, slender, straggling, branched, several feet long, especially when supported by other plants, roundish and smooth below, downy towards the extremities. *Leaves* smooth, alternate on footstalks, the lower ones ovate, heart-shaped at the base, the upper ones narrower, and mostly hastate at the base, a palish green, with a mid-rib, and numerous lateral branched veins. *Inflorescence* a lax branched corymb, on a longish stalk, arising opposite the leaves. *Flowers* numerous, dark purple, on a mostly smooth *pedicle*, arising from a swollen *bractea*. *Calyx* smooth, persistent, of five or ten obtuse segments. *Corolla* wheel-shaped, with a very short *tube*, the *limb* spreading, of from four to six segments, ovate-lanceolate, each with two green tubercles at the base, the margins finely ciliated. *Stamens* from four to six, according to the number of the segments of the corolla, but five is by far the most usual number. *Filaments* very short around the mouth of the tube of the corolla. *Anthers* long, yellow, large, united together in a hollow cone-shaped manner, each opening at the extremity by a small pore. *Style* in the middle, and longer than the stamens. *Stigma* rather small, obtuse. *Fruit* an ovate *berry*, bright scarlet or yellow, having from two to six cells, and numerous roundish compressed *seeds* in the midst of the soft pulp.

Habitat.—Hedges and bushes; frequent in England, less so in Scotland and Ireland.

Shrub; flowering in June and July.

β. tomentosum. Stems and leaves more or less clothed with a soft down.

A variety occasionally found in dry places, as on old walls, &c.

The Bitter-sweet or felon-wood has been usually considered a very poisonous plant, but from the experiments of Orfila and others, it does not appear to possess by any means active poisonous properties; it has the same effect as *Hyoscyamus*, but in a much feebler degree. M. Dumas has given to a dog 180 berries, or four ounces of the extract, without producing any ill effects, and he quotes an experiment on the human subject, where thirty-two drachms of extract were taken without injury. From which it would appear that it is scarcely entitled to the name of a poisonous plant. The same may be also stated with respect to the following plant, *S. nigrum*, which is, perhaps, the most active of the two species; but Orfila says it is not stronger than lettuce opium. Subjected to chemical analysis, M. Desfosses discovered their active principle to reside in a peculiar alkaloid, which is named *solanine*, or *solanina*, possessing narcotic properties, but is not an active poison.

The roots and stems of this plant are the parts used medicinally; when chewed, they have at first a bitter taste, which shortly changes to a considerable degree of sweetness; and hence it is that the plant has obtained the name of *Bitter-sweet*. It is narcotic, and has been found useful in humoral asthma, dropsy, and chronic rheumatism, but more especially in cutaneous diseases; and we have known it used to a considerable extent in syphilitic affections in place of sarsaparilla, and apparently with equal benefit as that far more expensive medicine. It is generally used in the form of infusion or decoction, but requires cautious watching in its administration, in not giving too large a dose, producing in such cases nausea, vomiting, fainting, and palpitation; if such symptoms occur, the dose must be diminished, and the addition of some aromatic is advisable.

2. *S. nigrum*, Linn. (Fig. 358.) common or Garden Night-shade. Stem herbaceous, leaves ovate, toothed and waved, umbels simple, lateral, drooping.

English Botany, t. 566.—English Flora, vol. i. p. 319.—Hooker, British Flora, vol. i. p. 111.—Lindley, Synopsis, p. 182.

Root annual, much branched. *Stem* erect, much branched and spreading, from one to two feet high, angular, or slightly winged, especially the branches, and scattered over especially towards the extremities, with soft hairs. *Leaves* numerous, alternate, on footstalks, smooth, or slightly hairy, ovate, bluntly toothed or waved, somewhat decurrent at the base, with a mid-rib, and numerous lateral veins. *Inflorescence* a simple racemose umbel, on a short hairy stalk, arising solitary from the stem, in the space between the branches, mostly about an inch below the upper branch. *Flowers* not very numerous, whitish, with a musky scent, drooping, each on a short hairy pedicel, thickened towards the extremity. *Calyx* of five obtusely angular



357

Solanum dulcamara.



358

Solanum nigrum.



359

Vinca minor.



360

Vinca major.



361

Samolus valerandi



362

Lobelia urens.

hairy segments. *Corolla* wheel-shaped, with a short tube, and five oblong lanceolate spreading segments, finely downy on the outside, and fringed on the margin. *Stamens* with very short *filaments*. The *anthers* yellow, oblong, united together in the form of a tube, opening at the apex with a small pore. *Style* downy, longer than the stamens, dilated at the base. *Stigma* obtuse. *Fruit* a round smooth black berry, with numerous ovate compressed *seeds*.

Habitat.—Waste places, road sides, &c. ; not uncommon.

Annual ; flowering from June to September.

β. humile, a smaller plant, smoother, with the leaves less decurrent, the angles of the stem less distinct, and with yellowish berries.

It is sometimes found growing with the above, and is the *S. humile* of Bernhard, the *S. luteo-virens* of Gemel. and the *S. nigrum* of De Cand. By the German Botanists it is considered a distinct species, but we are unable to satisfy ourselves of its being other than a variety of *S. nigrum*.

GENUS XXVII. VIN'CA.—LINN. *Periwinkle*.

Nat. Ord. APOCYNÆ. JUSS.

GEN. CHAR. *Calyx* five partite. *Corolla* salver-shaped, the segments oblique, spirally imbricated in the bud. The *tube* long, its orifice prominent, with five angles. *Anthers* closing over the pistil. *Stigma* crowned with a tuft of hairs. *Follicles* two erect. *Seeds* naked, (without seed down).—Name from *vincio*, to *bind*, either from its trailing stems binding round those of other plants, or because it is used in some places for wreaths and garlands.

1. *V. mi'nor*, Linn. (Fig. 359) *lesser Periwinkle*. Stem procumbent, leaves oblong lanceolate, their margins, as well as the segments of the calyx, smooth.

English Botany, t. 917.—English Flora, vol. i. p. 339.—Hooker, British Flora, vol. i. p. 114.—Lindley, Synopsis, p. 176.

Root with long creeping underground stems and branched fibres. *Stem* trailing, frequently much branched at the base, round, smooth, slender, simple, above leafy, the lower parts strong and very tough. *Leaves* opposite, smooth, shining, ovate lanceolate, on short channelled footstalks, the upper ones more acute at the extremities, mid-rib rather strong, with slender branched veins. *Flowers* solitary from the axis of the upper leaves, on a smooth, slender, erect stalk, shorter than the leaves. *Calyx* of five linear lanceolate segments, nearly equal, and

not half as long as the tube of the corolla. *Corolla* salver-shaped, the *tube* dilated upwards, and with slender veins running its whole length, the *limb* violet purple, about an inch wide, of five flat spreading obliquely truncated segments, spirally twisted together in the bud, the orifice of the tube surrounded with five prominent angles, paler than the rest. *Stamens* five, arising about the middle of the tube; above their origin to the orifice of the tube is clothed with short white shining hairs. *Filaments* short, dilated upwards, smooth above, hairy below, curved, beneath the stigma they are bent with an acute angle, afterwards curving over it, and with the connivent anthers turning over its summit quite enclose it on all sides. The *anthers* flat, auriculated at the base, curved over the stigma, pale yellow, of two cells opening on the inner side, with longitudinal fissures near the margins, the upper or convex surface mostly with a few simple hairs scattered over it, especially on the margin. *Style* short, smooth, swollen upwards. *Stigma* flat orbicular glandular, having from its disk, on a short stalk, a thick tuft of delicate white silky hairs. *Fruit* an erect two celled follicle, surrounded with the persistent calyx. *Seeds* without seed down, but seldom perfected in England.

Habitat.—Woods, hedges, groves, and shady places; not unfrequent in various parts of England, not so common in Scotland or Ireland.

Perennial; flowering from May to July.

This, we fear, in various stations described for it, is often the outcast of gardens; but it is decidedly wild in Devon, according to the *Rev. J. S. Tozer*, both with blue and white flowers. The white flowered variety is very common in gardens, and the leaves also variegated green and yellow; this variegation appears to be owing to the kind of soil in which they are grown. We have repeatedly taken fine healthy green leaved plants with purple flowers from a good soil, and planted them in one of poor rubbishy sand, gravel, &c., and in the course of one or two years the leaves have become variegated, and the flowers paler and shortly white; if these same plants were again removed to a good soil, they would soon regain their former state of green leaves and purple flowers. Both this and the following species are extremely useful plants to the gardener, growing and ornamenting with a good cover all the year, situations under the shade of trees, the drip of buildings, &c. where most other plants would perish; and they are not in the least particular as to the atmosphere being free from the smoke of houses: this renders them extremely useful in ornamenting suburban plantations, shrubberies, &c. affording a lively green cover all the year by their plentiful leaves, and in some situations they are scarcely ever without flowers.

V. minor, the *Clematide prima* of the old authors, was likened by them to a serpent creeping amongst the grass. The stems and leaves,

bruised in wine, they used as an astringent in dysentery, and as a gargle in relaxed sore throat; the bark masticated relieved tooth-ache; made into a plaster it cured the bite of serpents; and bruised in vinegar it relieved the sting of wasps.

It has long been the custom amongst the peasantry in Italy to wreath the brow, and, indeed, the whole body of unmarried persons, both men and women, as well as children, with this plant, intermixing with it various other evergreens and flowers of different kinds, forming gay garlands, and placing upon the breast a large bunch of the finest flowers that the season will afford; dressing in fact, the whole body in a vegetable garment, composed of the richest productions of Flora that they can meet with. This practice is still followed, especially amongst the peasantry in the provinces of Tuscany; and we think it most probable that the generic name of *Vinca* has been given to it from the circumstance of their using it to bind the bodies of their dead.

2. *V. ma'jor*, Linn. (Fig. 360.) *greater Periwinkle*. Stem sub-erect. Leaves ovate cordate, their margins, as well as those of the linear subulate segments of the calyx, ciliated.

English Botany, t. 514.—English Flora, vol. i. p. 340.—Hooker, British Flora, vol. i. p. 114.—Lindley, Synopsis, p. 176.

Root with long creeping underground stems, much branched. *Stems* numerous, branched and procumbent below, erect above, especially whilst flowering; round, smooth, and shining, not so long, or so tough and strong as *V. minor*, although the plant is much larger in all its parts. *Leaves* opposite, on short footstalks, of a dark shining green, smooth, except the margins being fringed with short white hairs, paler beneath, the lower ones ovate at the apex and base, the upper ovate, attenuated at the apex, rounder, or heart-shaped at the base, the mid-rib rather strong, with numerous slender branched veins. *Flowers* from the axis of the upper leaves, on round, erect, slender, smooth footstalks, half as long as the leaves, elongating after flowering, and reflected. *Calyx* of five narrow long subulate segments, nearly as long as the tube of the corolla, with a mid-rib, and the margins fringed with pale hairs. *Corolla* a fine blue or purple, but varying from a dark to a very pale blue, almost white, as large again as the last species, salver-shaped, the tube suddenly contracted in the lower half, striated with longitudinal veins, the limb spreading, of five flat obliquely truncated segments, frequently two inches across, the mouth of the tube surrounded with five prominent angular protuberances. *Stamens* about the middle of the tube, inserted into the top of the contracted part. The *filaments* short, and acutely angled at their insertion, smooth, but much dilated upwards, with a membranous margin above, which surrounds and encloses the lower annular part of the stigma. *Anther* flat, pear-shaped, with a

dilated auriculated margin at the base, smooth on the inner side, where it is concave, and where the longitudinal fissures of the cells open, the outer or convex surface of the anther is more or less thickly clothed with rigid pale hairs, they close over the upper tessellated part of the stigma, so that with the dilated filaments below, and the curved spreading anthers above, the stigma is completely enclosed in a kind of globular case. *Style* smooth, dilated upwards. *Stigma* a glandular ring, crowned with a thick tuft of white hairs on the top of a short pedicle from its disk. *Fruit* a follicle, of two cells, surrounded by the persistent calyx. *Seeds* several, large, whitish.

Habitat.—Woods and groves; naturalized.

Perennial; flowering in May and June.

An examination of the curious structure of this flower will afford the student much gratification. The stamens are very remarkable, but not more so than the stigmas; the tuft which surmounts the glandular ring is formed of simple and branched delicate hairs, and seem to act as a brush, perhaps to stimulate the discharge of the pollen, which they brush away and convey to the gland below it, upon which it will be observed the granules of pollen adhere. This operation is carried on in a closed case, as it were, which prevents our peeping in and observing the process; but we suppose, from having observed the hairs of the ring differently disposed at one time from another, that they have a peculiar function to perform. The structure of the fruit and seeds is also worthy of particular attention.

GENUS XXVIII. SA'MOLUS.—LINN. *Brookweed*.

Nat. Ord. (allied to.) PRIMULACE'Æ. BROWN.

GEN. CHAR. *Calyx* half superior five cleft. *Corolla* somewhat bell-shaped, with a short tube, its mouth surrounded with five scales, (sterile stamens), alternating with five stamens, and opposite the segment of the limb. *Capsule* half, superior, two celled, opening with five valves. *Seeds* numerous, fixed to a large central placenta.—“Named, some say, from the island Samos, where *Valerandus*, a botanist of the 16th century, is alleged to have gathered our *Samolus Valerandi*. Others, as Théis, derived it from *san*, *salutary*, and *mos*, a *hog* in Celtic; because it was used by the ancients for curing diseases in hogs.”

1. *S. Vale'randi*, Linn. (Fig. 361.) *Brook-weed*, or *Water Pimpernel*. Leaves oblong, obtuse; racemes many flowered, becoming

elongated, each pedicle with a small bractea about its middle; capsule sub-globose.

English Botany, t. 703.—English Flora, vol. i. p. 325.—Hooker, British Flora, vol. i. p. 114.—Lindley, Synopsis, p. 185.

Root of numerous white branched fibres. *Stem* erect, simple or branched, from six to eighteen inches high, round, smooth, and somewhat succulent, like the rest of the plant. *Leaves* alternate, somewhat fleshy, entire, with a strong mid-rib, and numerous lateral slender branched veins, the root leaves numerous, spreading around on footstalks, of variable length, oblong, ovate, rounded at the extremity, but more or less attenuated at the base, the upper or leaves of the stem sessile, or on short footstalks, ovate, with a short acute point. *Inflorescence* terminating the stem and branches, at first in a close corymbose raceme, at length elongating after flowering in the lower part. *Flowers* small, white, each on a simple slender stalk, more or less acutely bent about the middle, from whence arises a small ovate-lanceolate bractea. *Calyx* separating from the germen about half way up, its limb of five angular segments. *Corolla* very small, somewhat bell-shaped, with a short tube, the limb of five oblong obtuse spreading segments, having five small obtuse scales between each, and at the base of each segment around the mouth of the tube are the five stamens, on short broad filaments. The anthers ovate, of two cells, bursting with two lateral longitudinal fissures. *Style* erect, very short. *Stigma* obtuse. *Capsule* globose, of one cell, opening at the top with five lanceolate valves, splitting half way down, and curving backwards, closely invested in the lower half by the persistent calyx. *Seeds* numerous, angular, attached by one end to the central globose loose placenta.

Habitat.—Watery places, especially in a gravelly soil, both inland and near the sea; not uncommon.

Perennial; flowering in June and July.

Brook-weed appears to be found in almost all parts of the world, but does not seem to have been applied to any particular use, except that formerly it was used in some of the incantations and mystic ceremonies of the Druids, and thought a specific in almost all diseases affecting pigs.

GENUS XXIX. LOBE'LIA.—LINN. *Lobelia*.

Nat. Ord. LOBE'LIACEÆ. JUSS.

GEN. CHAR. *Calyx* five cleft. *Corolla* irregular, two lipped, five cleft. *Stamens* united around the pistil. *Stigma* blunt, mostly two lobed and hairy. *Capsule* of two or three cells, opening at

the apex with two or three valves.—Named in honour of *Matthias Lobel*, a Fleming who settled in England, and published several Botanical Works.

1. *L. u'rens*, Linn. (Fig. 362.) *acid Lobelia*. Stem erect; leaves toothed, the lower obovate, stalked, the upper lanceolate, sessile; flowers bracteated, in terminal racemes; calyx rough.

English Botany, t. 953.—English Flora, vol. i. p. 299.—Hooker, British Flora, vol. i. p. 115.—Lindley, Synopsis, p. 137.

Root fibrous. Stem about a foot high, erect, branched, angular, sometimes channelled, leafy, smooth, or somewhat rough. Leaves alternate, the lower ones on footstalks of variable lengths, obovate, and deeply toothed in an irregular manner, the upper lanceolate, sessile, with smaller and frequently more distant teeth, nearly smooth, except the margin, which is mostly rough, with minute points. Inflorescence long bracteated racemes, of alternate flowers, with a long pale tube, and beautiful blue limb, each on a short rough stalk, from the axis of a lanceolate or awl-shaped bractea, rough, with rigid points, simple or toothed. Calyx of five deep awl-shaped rough spreading segments, permanently crowning the capsule. Corolla of one piece, irregular, roughish externally; the tube a palish pink, swelling upwards, and split along its upper side about half way down, between the two upper narrow lanceolated reflexed segments of the limb, forming the upper lip; the lower lip of three lanceolate segments, the middle one the largest. Stamens five, from the middle of the tube of the corolla, and as long as it. The filaments and anthers united together around the pistil. The anthers purple and roughish, the two upper ones rather longer than the others, and curved over the pistil. Style as long as the filaments, mostly curved upwards between the two upper segments of the corolla. Stigma obtuse, cleft into two lobes, and hairy beneath. Capsule oblong, angular, roughish, crowned by the persistent calyx, of two or three cells, opening at the apex with two or three teeth. Seeds small, numerous.

Habitat.—Heathy ground; very rare. Near Axminster—*Mr. Newberry*; and Ottery St. Mary, Devonshire—*Miss Burgess*.

Perennial; flowering in August and September.

This rare and beautiful little plant exudes from all parts of it, when broken, a milky acid fluid, a quality possessed by most plants of the genus; and some of them, as *L. longiflora*, are highly poisonous to the animals that eat it; and from its being the cause of frequently destroying horses, it is known by the appellation of *horse poison*. The *L. Tupa* is said to be still more baneful than this, for Fenillée says that the odour arising from the flowers will cause vomiting; and if applied either externally to the skin, or taken internally, it produces violent inflammation and pain, and is often followed by death; some other

species are equally injurious. The *L. inflata* is much recommended as a medicine for the relief of spasmodic asthma, difficulty of breathing, and even croup may be relieved by it; if taken in too large a dose, it acts as an emetic, but is violent in its operation, producing very frequently giddiness, pain in the head, and faintness. The flowers of many of the species are very beautiful, of brilliant scarlet and purple colours, flourishing well in open warm borders in a light soil; others require the protection of the greenhouse. The milky juice contains a considerable portion of caoutchouc, or Indian rubber, but apparently much more in some than in other species. *L. caoutchouc* is so named from the circumstance of its being one of the plants, from which that very useful and valuable substance is procured. It will be remembered by many persons that Indian rubber was a few years since known only as an article useful in erasing the marks of lead pencils, and was imported into this country in small quantities; but now so extensively is it applied in the making of many useful articles of wearing apparel, surgical instruments, bandages, &c. &c. that the demand for it is not by pounds' weight, but tons; and ships laden only with this substance are sent to this country.

2. *L. Dort'manna*, Linn. (Fig. 363.) *Water Lobelia*. Scape nearly naked. Flowers racemed. Leaves linear, sub-cylindrical, entire, obtuse, of two parallel tubes.

English Botany, t. 140.—English Flora, vol. i. p. 298.—Hooker, British Flora, vol. i. p. 115.—Lindley, Synopsis, p. 137.

Root of numerous long simple white fibres. *Scape* round, simple, smooth, hollow, from six to twelve inches long, erect, with one or two small obtuse leaves upon it, the radical leaves numerous, tufted, cylindrical, smooth, somewhat recurved, obtuse, from one to three inches long, formed of two cylindrical longitudinal cells, with thin walls and slight partition. *Inflorescence* a terminal raceme, reaching a few inches above the water, of a few alternate pale blue drooping flowers, each arising from the axis of a small obtuse bractea, on a slender footstalk. *Calyx* of five lanceolate obtuse spreading segments, quite smooth. *Corolla* larger than the last, the tube with a longitudinal slit between the two small segments, nearly cylindrical, pale, somewhat bearded in the throat, the limb more irregular, the segments of the upper lip much narrower than the lower. *Stamens* included within the tube of the corolla, united into a tube round the pistil. The *anthers* ovate, dark purple, two larger and curved over the stigma, mostly smooth, the three smaller bearded at the apex, with white shining hairs. *Stigma* obtuse at length, of two lobes, slightly bearded beneath. *Capsule* oblong, smooth, of five angles, crowned near the summit, with the persistent calyx, opening with five small teeth, erect on its stalk, drooping when in flower. *Seeds* small, mostly numerous.

Habitat.—Shallow parts of lakes, especially in mountainous districts, in the Northern parts of England, Scotland, and Ireland; common.

Perennial; flowering in July and August.

This plant generally grows much crowded together, its numerous leaves greatly matted, forming at the bottom of the lakes a thick layer, the stems seldom reaching more than a few inches above the surface of the water: they have not the power of elongation, as some plants have, of raising themselves, in case of an increase of the waters; but both the leaves and stem are furnished, as is the case with all water plants, with curious air cells. The corolla, and especially the stamens and pistil of this genus, are of remarkable structure; and the student, after their minute examination, will, we doubt not, be ready to exclaim with Byron,

“true Wisdom's world will be
Within its own creation, or in thine,
Maternal Nature.”

GENUS XXX. JASIONE.—LINN. *Sheep's-bit*.

Nat. Ord. CAMPANULACEÆ. JUSS.

GEN. CHAR. *Calyx* five-cleft. *Corolla* wheel-shaped, in five deep narrow segments. *Anthers* united at the base. *Stigma* club-shaped, bifid. *Capsule* two celled, opening at the apex. (Flowers collected into a head with a many leaved involucre).—Name “supposed from *iov*, a *violet*, from the blue colour of its flowers, applied by Pliny to some esculent plant.”

1. *J. montana*, Linn. (Fig. 364.) *Sheep's-bit*, or *Sheep's Scabious*. Leaves linear, waved, hispid. Root annual.

English Botany, t. 882.—English Flora, vol. i. p. 296.—Hooker, British Flora, vol. i. p. 114.—Lindley, Synopsis, p. 137.

Root small, tapering. *Stems* erect, from one to two feet high, either single, or numerous from the same root, simple, or much branched, roundish, rough, with simple rigid hairs, leafy. *Leaves* alternate, numerous, sometimes crowded, linear, obtuse, with a strong mid-rib, and scattered over with hairs, the lower ones with a tapering footstalk, the upper sessile, darker green above than beneath, the margins slightly recurved, and mostly waved. *Inflorescence* capitate, surrounded by an *involucre* of numerous ovate-lanceolate notched or waved imbricated leaves. *Flowers* bright blue, densely crowded into an hemispherical head, each flower elevated on a short slender footstalk, and having a *calyx* of five narrow awl-shaped segments, seldom



363

Lobelia dortmanna.



364

Jasione montana.



365

Phyteuma orbiculare.



366

Phyteuma spicatum.



367

Campanula rotundifolia.



368

Campanula patula.

of equal lengths, somewhat membranous at the base. *Corolla* wheel-shaped, with a short *tube*, the *limb* of five mostly regular linear obtuse spreading segments. *Stamens* five, inserted into the ovarium, about half the length of the corolla. *Filaments* awl-shaped, free. *Anthers* oblong, of two cells, mostly united at the base around the *style*, which is as long again as the stamens, bearing a club-shaped *stigma*, notched at the extremity, with a furrow on one side of most of them. *Capsule* of two imperfect cells, with five angles, opening at the apex with a small pore. *Seeds* numerous, very small, attached to a central placenta.

Habitat.—Dry heaths, sandy pastures, and tops of old walls; common.

Annual; flowering in June and July.

From the general appearance of this plant, the student might suppose that it belonged to the genus *Scabiosa*; but, upon examination, he will find them very different. It has also a considerable resemblance to the natural order *Compositæ* (class *Syngenesia*), amongst which it was placed by Linnæus; but this has a distinct calyx to each perfect flower, elevated on a footstalk, which is not the case with *compositæ*. The flowers, however, are collected into a head, within a general involucre, and the union of the anthers around the style shows the near affinity it bears to that order, and it will be seen how nearly allied it is to the following genus *Phyteuma*.

GENUS XXXI. PHYTEU'MA.—LINN. *Rampion*.

Nat Ord. CAMPANULACEÆ. JUSS.

GEN. CHAR. *Calyx* five-cleft. *Corolla* wheel-shaped, in five deep narrow segments. *Filaments* dilated at the base. *Anthers* free. *Stigma* three-cleft. *Capsule* of two or three cells opening at the side. (Flowers collected into a dense bracteated head or spike.)—Name *φυτευμα*, to *generate*, from its supposed properties of exciting love.

1. *P. orbicula're*, Linn. (Fig. 365.) *round-headed Rampion*. Flowers in a roundish head; root leaves ovate cordate crenated on long footstalks, those of the stem lanceolate serrated as well as the bractea.

English Botany, t. 142.—English Flora, vol. i. p. 296.—Hooker, British Flora, vol. i. p. 115.—Lindley, Synopsis, p. 135.

Root long, woody; branched, especially near the surface. *Stem*

erect, simple, roundish, striated, smooth, or slightly scattered over with hairs, from one to two feet high, surrounded by a tuft of leaves at the root, and with alternate ones above. *Leaves* more or less hairy, especially on the margin, paler beneath, with a strong mid-rib, and numerous small branched lateral veins. The *root* leaves on long slender footstalks, channelled above, ovate oblong heart-shaped or rounded at the base, the margin crenated, these leaves often wither and die away, while those on the stem are in perfection, the leaves on the lower part of the stem with a short broad footstalk, lanceolate, with serrated margins, alternate, mostly distant, becoming smaller towards the top of the stem, and generally more fringed on the margin, with fewer or without serratures. *Inflorescence* a terminal, dense, roundish head of numerous beautiful blue *flowers*, surrounded at the base with several ovate-lanceolate *bractea*, with a mid-rib, and fringed margins, and each flower has at its base a small ovate lanceolate bractea, about as long as the *calyx*, which is superior, of five broad lanceolate segments, smooth, spreading. *Corolla* wheel-shaped, long, narrow, linear, of a fine blue colour, with a short tube. *Stamens* five, arising from the bottom of the tube, alternating with the segments of the corolla. The *filaments* slender, awl-shaped, about half as long, or shorter than the corolla. *Anthers* long, linear, of two cells. *Style* longer than the corolla, hairy, curved towards the end. *Stigma* three-cleft, spreading. *Capsules* ovate, angular, crowned by the persistent calyx, which spreads its segments out in a star-like manner, three celled, opening laterally. *Seeds* numerous, somewhat angular, attached to a central placenta.

Habitat.—Pastures, and by road sides, in a chalky soil; rare. On the downs of Sussex and Hampshire; in Surrey and Kent.

Perennial; flowering in August.

2. *P. spica'tum*, Linn. (Fig. 366.) *spiked Rampion*. Flowers in an oblong spike; root leaves oblong cordate, with somewhat compound serratures, on slender footstalks, those of the stem lanceolate, sessile, as are the bractea.

English Botany, Suppt. t. 2598.—Hooker, British Flora, vol. i. p. 115.—Lindley, Synopsis, p. 135.

Root white, fleshy, spindle-shaped, branched, with a few fibres, and containing a milky juice. *Stem* roundish, smooth, striated, and often somewhat twisted in the upper part, erect, simple, from one to three feet high, slender. *Leaves* numerous, smooth, with a strong mid-rib, and slender branched veins, those from the root and bottom of the stem on channelled footstalks of variable lengths oblong broad at the base and heart-shaped, the margin more or less doubly serrated, smooth, rarely simple, leaves on the lower half of the stem lanceolate, sessile, simply serrated or toothed, those on the upper part, few, small, linear. *Inflorescence* a terminal cylindrical spike, from two to four

inches long, of numerous yellowish green *flowers*, each having at its base a linear *bractea* shorter than the flowers, and hid amongst them, except a few at the base of the spike, which are long and spreading. *Calyx* of five awl-shaped spreading segments. *Corolla* wheel-shaped, with a very short tube, the limb of five deep narrow linear long spreading segments, of a yellowish green colour. *Stamens* five from the bottom of the tube of the corolla, with slender awl-shaped *filaments*, and long linear two celled *anthers*. *Style* much longer than the stamens, somewhat hairy above. *Stigma* two or three cleft, reflexed. *Capsule* oblong, angular, crowned by the persistent calyx, of two cells, opening laterally. *Seeds* small, numerous, angular, attached to a central placenta.

Habitat.—Woods, thickets, hedges and fields, recently cleared of wood in several stations about Mayfield and Waldon, Sussex.—*Mr. Borrer*. First detected in the former place by the Rev. Ralph Price, in 1825.

Perennial ; flowering in June and July.

This *Phyteuma* is mentioned by Parkinson as growing “in divers places of this land.” It was formerly grown as an esculent vegetable, and whether a native or not, is somewhat doubtful; it may have escaped from gardens, and now become naturalized. Its growth is limited to a small circuit, but it has probably as great a claim to rank amongst the plants of our Flora, as some others. It is not uncommon on the continent in woods and mountain pastures.

GENUS XXXII. CAMPAN'ULA.—LINN. *Bell-flower*.

Nat. Ord. CAMPANULACEÆ. JUSS.

GEN. CHAR. *Calyx* five-cleft. *Corolla* bell-shaped, or wheel-shaped, with five larger or smaller segments, the mouth of the tube closed with the dilated base of the *filaments*. *Anthers* free. *Stigma* two to five-cleft. *Capsule* from two to five celled, opening on the side, rarely at the extremity.—Named from the shape of the corolla, *Campana*, a bell.

* *Flowers* in panicles, or racemes. *Capsule* opening by lateral pores.

1. *C. rotundifolia*, Linn. (Fig. 367.) round-leaved Bell-flower, or Hare-bell. Smooth root leaves sub-rotundate heart-shaped at the base, crenated petiolated those of the stem lanceolate and crenated in the lower part, linear and entire above; flowers drooping; segments of the calyx subulate, simple.

English Botany, t. 866.—English Flora, vol. i. p. 288.—Hooker, British Flora, vol. i. p. 116.—Lindley, Synopsis, p. 136.

Root long, slender, branched, somewhat wiry. *Stems* mostly numerous, erect, or bent at the base, and sometimes sending out short runners from the bottom, slender, round, smooth, as is the whole plant, either simple or slightly branched, mostly very leafy, from one to two feet high; the *root leaves* generally very numerous, but soon withering, roundish, or oblong, with a heart-shaped base, the margins crenated and rough, like those of the stem, with a minutely serrated cartilaginous edge, the footstalks long and slender, the leaves of the stem in the lower part on footstalks also, oblong-lanceolate, crenated, becoming lanceolate, above sessile, linear, and entire on the margin, they are very variable in length and numbers, alternate. *Inflorescence* a terminal scarcely branched panicle, of a few gracefully drooping sky blue flowers, on slender stalks of variable lengths, each having at its base an awl-shaped *bractea*, and not unfrequently one or two small ones on the stalk. *Calyx* in five, awl-shaped, entire spreading segments. *Corolla* about three times as long, bell-shaped, with a short *tube*, the *limb* of five broad acute spreading segments. *Stamens* half as long as the corolla. The *filaments* broadly dilated at the base with a fringed margin, the upper part slender, smooth, spreading, while the base forms valves which converge together and completely close up the mouth of the tube. *Anthers* oblong, of two cells, yellow. *Style* as long as the corolla. *Stigma* three-cleft, hairy. *Capsule* roundish, oblong, with ten ribs, crowned by the persistent calyx, of three valves, opening on the side. *Seeds* small, numerous.

Habitat.—Dry hills, pastures, banks, walls, &c.; common.

Perennial; flowering in July and August.

β. hirta, *De Cand.* Leaves and stem in the lower part of the plant, hairy.

γ. lancifolia, *De Cand.* Leaves in the lower part of the stem, two inches long, and three or four lines wide, above narrower and shorter.

These varieties we have occasionally met with. The first on very dry sandy banks, and old walls. It is seldom more than six inches high, while the variety *lancifolia* grows in a damp shady situation, and is smooth, stout, and mostly two feet high, with but few ovate root leaves, those of the stem very long, and often much crowded.

No one who has made the collecting of plants either a part of his amusement or study, will turn over the collection of his herbarium, without almost every specimen reminding him of the circumstances under which it was gathered—nay, even the spot where, perhaps, the

“Stranger’s, whose steps have reached this solitude,
Know that this lonely spot was dear to one
Devoted with no unrequited zeal
To Nature:—”

and who can have gathered the beautiful *Hare-bell* gracefully bending on its slender stem, ringing its chimes to the song of the zephyrs, and saluting them as they pass over the dreary moors, or perhaps along the shady glen or bounding on the green clad mead, without having the place of its abode impressed upon the memory. It is so delicate in the colour of its flowers, so elegant in its form, so slender and graceful in its structure, as to be the favourite theme of many a worthy poet's song. In the garden it is frequently cultivated, and some beautiful delicate varieties obtained, the corolla often becoming pure white.

2. *C. patula*, Linn (Fig. 368.) *spreading Bell-flower*. Stem angular, rough; leaves crenated, roughish, those of the root oblong-lanceolate, shortly petiolated; those of the stem linear, lanceolate, sessile; flowers erect, paniculated; segments of the calyx subulate, toothed.

English Botany, t. 42.—English Flora, vol. i. p. 289.—Hooker, British Flora, vol. i. p. 116.—Lindley, Synopsis, p. 136.

Root white, long, tapering. *Stem* erect, two feet high, or more, simple, or branched, angular and rough, with rigid deflexed hairs, leafy. *Leaves* alternate, crenated, and hairy, the lower and root leaves oblong-ovate or oblong-lanceolate, soon withering, on a short decurrent footstalk, the leaves on the lower part of the stem lanceolate, nearly sessile, while those above are long, linear, lanceolate, sessile, and the margins more serrated or toothed than crenated, and mostly less hairy than the others, and more distant. *Inflorescence* a terminal, branched, erect panicle, of numerous erect flowers, alternate, on a smoothish nearly naked common stalk, each flower on a short slender erect footstalk from the axis of a narrow subulate bractea. *Calyx* of five long awl-shaped erect segments, broadish at the base, with one or two teeth on each side, smooth and shining. *Corolla* larger than the last, erect, wider, and more broadly spreading at the mouth, with deeper more angular spreading segments, of a fine purplish blue, veiny, the tube very short. *Stamens* about half as long as the corolla, the filaments broadly dilated at the base and hairy, closing over the mouth of the tube, the upper part broad, smooth, bearing a long linear two celled anther, of a yellow colour. *Style* about the length of the corolla, with a long hairy three-cleft stigma. *Capsule* oblong, with five prominent angles, and five smaller alternate ones, somewhat downy between the angles, of three cells, opening near the top on the sides with a small oval opening. *Seeds* small, oval, numerous.

Habitat.—Pastures and hedges; rare. Confined to the middle and south-eastern counties of England, as Nottinghamshire, Leicestershire, Worcestershire, Staffordshire, Norfolk, Surrey, and Kent.

Biennial; flowering in July and August.

The whole plant varies more or less in hairiness, by which distinction several varieties are mentioned by Continental Botanists, with whom it is much more frequent than with us. It is readily distinguished from *C. rotundifolia*, by its more branched erect panicle, its larger more spreading not drooping flowers, and its broader crenated leaves. The whole plant, too, is taller, stouter, and more robust. It, like most other of the genus, contains an acrid milky juice, but not so much as to render it disagreeable to cattle.

3. *C. Rapun'culus*, Linn. (Fig. 369.) *Rampion Bell-flower*. Stem somewhat angular, rough below; leaves crenate, roughish; those of the root ovate, oblong, petiolated, upper ones narrower, sessile, lanceolate; panicle erect, racemose; segments of the calyx subulate, simple.

English Botany, t. 283.—English Flora, vol. i. p. 291.—Hooker, British Flora, vol. i. p. 116.—Lindley, Synopsis, p. 136.

Root fleshy, tapering, white, and milky. *Stem* erect, from two to three feet high, somewhat angular, simple, or sometimes branched, smooth or hairy, especially below, leafy. *Leaves* smooth, or sometimes hairy, rather paler below than above, the margins crenated, those of the root ovate, oblong, tapering into a footstalk of variable length, the upper narrower, linear, lanceolate, and sessile. *Inflorescence* a terminal, erect, simple, or slightly branched, racemose, panicle of numerous spreading more truly campanulate flowers, of a fine blue colour; the flower stalks and stem round, quite smooth, as are the small lanceolate bractea. *Calyx* of rather long, narrow, erect, spreading or reflexed, awl-shaped segments, the margins without teeth. *Corolla* larger than in the last species, of a fine bluish purple colour. *Stamens* not half as long as the corolla. *Filaments* dilated at the base into a valve, closing over the tube of the corolla, hairy, especially on the margins. *Style* half as long again as the stamens, downy above. *Stigma* three-cleft, spreading, or rolled back. *Capsule* oblong, with five prominent angles, and five small alternate ones, smooth, or sometimes slightly downy, opening near the top with the small oval openings. *Seeds* small, oval, numerous.

Habitat.—A gravelly soil, in the southern and midland counties; not very common.

Perennial; flowering in July and August.

The roots of this plant have a sweet, somewhat pungent taste, which in a great measure it loses by cultivation. Formerly this plant was much grown in England as a culinary vegetable, and was known by the name of *Ramps*; it is now, however, almost or entirely neglected; but on the continent it is much used, and especially in Italy, where in the mountainous districts it grows abundantly, and is collected and brought to market by the peasantry, with whom it forms a

considerable article of consumption during its season, boiled into a kind of soup, with a little vermicelli, or eaten raw with bread.

4. *C. persici'folia*, Linn. (Fig. 370.) *Peach-leaved Bell-flower*. Smooth stem, round, few flowered; root leaves obovate stalked; those of the stem sessile, linear, lanceolate, remotely serrated; raceme few flowered; segments of the calyx lanceolate, entire; corolla large, spreading.

English Flora, vol. i. p. 291.—English Botany, Suppt. t. 2773.—Hooker, British Flora, vol. i. p. 116.—Lindley, Synopsis, p. 136.

Root somewhat creeping, slender, knotted, and fibrous above. The whole plant destitute of hairs. *Stem* erect, generally simple, from one to two feet high, shining, somewhat angular. *Leaves* alternate, mostly distant on the stem, those arising from the base of the stem and root ovate-oblong, somewhat decurrent, on a long footstalk, the margins crenated, or bluntly serrated, shortly withering, the leaves of the stem narrow, linear, lanceolate, those on the lower part on footstalks, the upper sessile, all with a strong mid-rib, and numerous minute branched veins, the margins remotely and more or less distinctly serrated. *Inflorescence* a terminal, few flowered, raceme. *Flowers* from the axis of a lanceolate bractea on a short footstalk. *Calyx* of five spreading lanceolate segments. *Corolla* large, of a fine purplish blue colour, wide spreading, the segments large, broad, acutely pointed. *Stamens* with a broadly, dilated, obovate, hairy base, closing over the mouth of the short tube of the corolla, slender and smooth above. *Anthers* long, linear, hairy, of two cells, yellow. *Pistil* as long as the corolla. *Style* smooth. *Stigma* long, hairy, deeply three-cleft, and spreading. *Capsule* obovate, angular, crowned by the persistent calyx, of three cells, opening near the top of the sides with a circular opening, the valve curving upwards. *Seeds* numerous, ovate.

Habitat.—Woods, near Cullen, Scotland, apparently indigenous.—*Mr. G. Don*.

Perennial; flowering in July.

We have not been able to obtain wild native specimens of this plant; it is frequent on the continent, and its claim to the rank of one of our indigenous species is very doubtful. It is frequently cultivated as a border flower, and is very ornamental, its flowers mostly becoming double, and often pure white; and from its resemblance to a small rose, it is called in some parts of the country the "rose without a thorn."

5. *C. latifo'lia*, Linn. (Fig. 371.) *Giant Bell-flower*. Stem simple, rounded; leaves ovate-lanceolate, acuminate, coarsely and doubly serrated, hairy, raceme of erect stalked axillary flowers; segments of the calyx smooth, lanceolate, erect.

English Botany, t. 302.—English Flora, vol. i. p. 291.—Hooker, British Flora, vol. i. p. 117.—Lindley, Synopsis, p. 136.

Root somewhat fleshy, with long branched fibres, exuding when broken an acrid milky fluid like the whole plant. *Stem* from two to three or four feet high, erect, simple, roundish, or obscurely angular smooth, or scattered over more or less profusely with soft hairs, leafy the *leaves* alternate, large, lanceolate, with a tapering point, the margins coarsely and doubly or irregularly serrated, the teeth blunt, the lower ones on short footstalks, the upper nearly sessile, roughish, with spreading hairs, especially on the under side along the mid-rib, and lateral branched veins. *Inflorescence* a long terminal raceme, or occasionally a slight branched panicle of numerous large axillary *flowers*, arising single, or sometimes the lower ones of the raceme double, on a branched slender erect stalk, which is somewhat angular, roughish generally without, but sometimes there is a small lanceolate scale upon it, the floral leaves or *bractea* in the lower part lanceolate, serrated, becoming narrower upwards, at length linear and entire. *Calyx* erect, of five lanceolate or somewhat ovate-lanceolate segments, with entire or serrated margins, smooth, or scattered over with hairs, and the margins ciliated. *Corolla* large, deep blue, erect, or slightly drooping, the segments lanceolate, reflexed. *Stamens* about one-third the length of the corolla, downy, with a broad dilated valve at the base, closing over the mouth of the short tube of the corolla. *Anthers* long, linear, very downy. *Pistil* nearly as long as the corolla, downy, thickening upwards. *Stigma* deeply three-cleft. *Capsule* angular, mostly smooth, crowned by the persistent calyx, three celled, opening near the top with oval lateral pores. *Seeds* numerous.

Habitat.—Moist woods, and shady places; not very common. In Norfolk, Suffolk, Bedfordshire, Lincolnshire, and the North of England; more frequent in Nottinghamshire, Derbyshire, and Yorkshire; but in the woods and shady glens of Scotland very frequent; and in woods by the river Barrow, above New Ross, Ireland.

Perennial; flowering in July and August.

The Giant Bell-flower is the largest and most ornamental of our species, having a very stately and noble appearance, raising its gay head far above its companions in its native abode: in the close shady woods, as well as by cultivation, the flowers become paler, sometimes white, and of a pinkish tinge. It is well calculated to ornament shady walks, plantations, and groves, but does not flourish so well in an open situation.

6. *C. rapunculoïdes*, Linn. (Fig. 372.) *creeping Bell-flower*. Stem slightly branched, obtusely angular; leaves cordate-lanceolate, unequally crenated, hairy; raceme of drooping stalked axillary unilateral flowers; segments of the calyx hairy, lanceolate, spreading.



369

Campanula rapunculus



370

Campanula persicifolia.



371

Campanula latifolia.



372

Campanula rapunculoides.



373

Campanula trachelium.



374

Campanula glomerata.

English Botany, t. 1369.—English Flora, vol. i. p. 292.—Hooker, British Flora, vol. i. p. 117.—Lindley, Synopsis, p. 136.

α. major. Whole plant, except the corolla, much larger, and nearly smooth.

Root with long creeping underground stems. *Stem* erect, sometimes slightly branched, but mostly simple, from one to two feet high, or more, obtusely angular, scattered over with reflexed hairs, nearly smooth in the lower part, but hairy above. *Leaves* alternate, rough, with rigid hairs, especially near and on the margins, coarsely and irregularly crenated, or obtusely serrated, the mid-rib strong, and with the branched lateral veins rougher below than above, the lower leaves on footstalks, broadly lanceolate, with a heart-shaped base, the upper ones sessile, ovate lanceolate, gradually diminishing to lanceolate and linear bractea. *Inflorescence* a terminal raceme, of distant one-sided flowers. *Flowers* large, drooping, on a short angular hairy stalk, solitary from the axis, of linear or lanceolate bractea, which are crenated below, simple above, rough, and with strongly ciliated margins, *Calyx* hairy, its segments lanceolate, entire, spreading, or reflexed, *Corolla* smaller than the last species, of a deep purplish blue, scattered over with long soft hairs, especially on the margin of the spreading acutely lanceolate segments, sometimes the hairs are absent, but within near the bottom seldom wanting. *Stamens* half as long as the corolla, dilated into an angular base, ciliated on the margin, and hairy within, closing over the short tube of the corolla. The *filaments* slender, short. *Anthers* long, linear, of two cells. *Pistil* about as long as the corolla. *Style* hairy, thickened upwards, and scattered over with small warty excrescences. *Stigma* three-cleft, recurved. *Capsule* ovate, or roundish, angular, hairy, three celled, opening near the base with three large roundish pores.

Habitat.—Woods and fields; rare. Oxfordshire.—(*Buddle's Herb.*) On the magnesian limestone between Wentbridge and Darlington, Yorkshire.—*Mr. J. Backhouse.* Blair in Athol, Scotland; and found plentifully in corn fields two miles N. W. of Kirkcaldy, (where it is considered a troublesome weed by the farmer).—*Alexander Chambers, Esq. Hooker.* Castle Hill, on a sandy soil, Worksop, Nottinghamshire; and the variety *α. major* in clayey woods, in the vicinity of Lincoln.—*R. D.*

Perennial; flowering in July and August.

This species is readily distinguished from *C. latifolia*, by its lower heart-shaped leaves, and its drooping one-sided flowers. The variety *α. major* rivals in magnitude that of *C. latifolia*. It has, however, otherwise the same marked characteristic difference in its structure. Some of my specimens of it are a shining green, and almost without any hairs upon them, especially in the lower part of the plant.

7. *C. Trachelium*, Linn. (Fig. 373.) *Nettle-leaved Bell-flower*. Stem angular, simple; leaves hispid, coarsely and doubly serrated, cordate lanceolate, petiolated; raceme of a few stalked axillary flowers; segments of the calyx ovate lanceolate, erect.

English Botany, t. 12.—English Flora, vol. i. p. 293.—Hooker, British Flora, vol. i. p. 117.—Lindley, Synopsis, p. 136.

Root somewhat woody. *Stem* erect, simple, acutely angular, from two to three feet high, leafy, of a reddish purple colour, rough, with coarse spreading hairs. *Leaves* alternate, somewhat rugose and rough, with rigid hairs, especially on the mid-rib, and branched veins on the under side, the margins coarsely and irregularly crenated, the lower leaves on footstalks of variable lengths, ovate lanceolate, heart-shaped at the base, and tapering at the point, the upper leaves on short footstalks, or sessile, ovate lanceolate. *Inflorescence* a terminal leafy raceme, of a few large blue flowers, arising from the axis of the ovate lanceolate crenated bractea, the flower stalk simple, sometimes branched, and bearing two or three flowers, short, angular, rough. *Calyx* large, of five ovate lanceolate erect veiny segments, rough, especially towards the base. *Corolla* large, spreading, scattered over both on the external and internal surface, with long spreading hairs, the segments lanceolate, spreading, fringed with slender hairs. *Stamens* short, hairy. *Filaments* dilated into angular valves at the base, closing over the short tube of the corolla, slender above. *Anthers* short, oblong. *Pistil* nearly as long as the corolla, thickened upwards. *Stigma* three-cleft, recurved. *Capsule* ovate, three celled, many seeded.

Habitat.—Woods, not unfrequent in England; old walls. Mugdoch Castle, near Glasgow, Scotland.—*Mr. Hopkirk*. Between Glasnevin and Finglass.—*Dr. Brinkley*. River side below Innistogue, County of Kilkenny, Ireland.—*Mr. Templeton*.

Perennial; flowering in July and August.

The English name of this plant is from the resemblance of the leaves to those of a nettle; its hairs are also almost as pungent, but they are not venomous. Formerly a decoction of its leaves was thought useful in inflammatory affections of the throat and mouth; hence its specific name of *Trachelium*. It is, however, we believe, not now used for that purpose; it contains an acrid milky juice, and may have been useful as a stimulating gargle. It is cultivated as a border flower, and is very ornamental, the flowers often becoming very double, and sometimes quite white.

** *Flowers sessile, spiked, or collected into a terminal head. Capsule opening by lateral pores.*

8. *C. glomera'ta*, Linn. (Fig. 374.) *clustered Bell-flower*. Stem angular, simple, hairy, or smooth; leaves oblong lanceolate, rough,

finely crenated, the lower ones petiolated, the upper sessile; flowers sessile, in axillary and terminal clusters.

English Botany, t. 90.—English Flora, vol. i. p. 293.—Hooker, British Flora, vol. i. p. 117.—Lindley, Synopsis, p. 136.

β. farinosa. Stem and under-side of the leaves thickly clothed with white woolly hairs.—*C. glomerata*, *β. salvia folia*, Wahl. Sched. *C. farinosa*, Andrez. *C. petrea*, Schmidt and De Cand. Fl. Franc. *C. aggregata*, *α. farinosa*, Reicheub l. c. f. 757—759.

γ. aggregata. Green leaves of the stem with a broad petiole, flowers large.—*C. aggregata*, Willd. suppl. Reicheub. ic. 6. f. 760, 761.

δ. speciosa. Green leaves all ovate, heart-shaped at the base, flowers large.—*C. speciosa*. Hornan. hafer. Reicheub. ic. 6. f. 762.

ε. elliptica. Leaves all rounded at the base, or attenuated into a footstalk, acuminate at the apex.—*C. elliptica*. Reicheub, ic. 6. f. 763, 764.

ζ. lancifolia. Leaves all lanceolate, the lower ones petiolated, the margins waved and irregularly crenated, slightly downy.

η. attenuata. Leaves all lanceolate, with a long attenuated point, minutely downy, the lower ones on a short broad petiole.

Root of strong woody fibres. *Stem* erect, from six to twenty inches high, angular, simple sometimes, but rarely branched, of a purplish colour, and more or less clothed with hairs, sometimes smooth, at others woolly, leafy. The *leaves* alternate, those arising from the root on long footstalks of variable shapes, usually oblong lanceolate, with a heart-shaped base, the upper ones mostly sessile, or with short footstalks, oblong lanceolate, partly embracing the stem at the base, paler beneath, and generally more hairy than the upper side, the margins finely crenated, the upper ones sometimes entire, the hairiness is extremely variable, the upper side is sometimes quite or nearly smooth, as well as the under, at others the under side alone clothed with hairiness, and not unfrequent, both soft, with spreading hairs. *Inflorescence* a terminal spike, with axillary clusters of sessile flowers from the bottom of the upper leaves, large, erect, of a fine blue colour, each flower having at its base a *bractea* of greater or less size, mostly broadly ovate, acute. *Calyx* of five narrow lanceolate segments, erect and downy. *Corolla* large, erect, with five acute segments, quite smooth, or scattered over with simple pale hairs, longer, and often more numerous on the inside than out. *Stamens* short, dilated into an ovate valve at the base, hairy, especially within and on the margins, closing over the base of the erect simple downy *style*, which is not so long as the corolla. *Stigma* two or three cleft, downy, recurved. *Capsule* ovate, angular, hairy.

Habitat.—Dry pastures, especially of a clayey or chalky soil; not

unfrequent in England. "Hilly pastures in Scotland; but confined, we believe, to the east side between the Firth of Forth and Montrose."

Perennial; flowering in July and August.

Few, if any of our native plants, vary so greatly as this. We have enumerated the principal varieties that we have met with; the leaves vary in their size as to length and breadth, and are either smooth, hairy, downy, or woolly, the flowers are either large or small, only terminating the stem with a simple cluster, or with axillary ones also for some distance down the stem. Of those varieties which we have enumerated, the *lanceifolia* appears to us the most like a distinct species, the leaves are all truly lanceolate, the margins waved, irregularly crenated, a fine green above and scarcely hairy, beneath pale and much more hairy, the flowers small, stigma three-cleft, the lower leaves have long winged footstalks, the upper with a broad one, but not embracing the stem. The *ε. elliptica* has rather small elliptic leaves, elevated on a footstalk, the upper or floral leaves alone sessile, all thickly clothed with short soft down, the flowers small, downy. *η. attenuata* has nearly all its leaves sessile, or with a broad footstalk, ovate lanceolate, with a long tapering point, green above and finely downy, pale beneath, and soft, with spreading hairs. It is probable that many of these varieties are, owing to the circumstances of their growth with regard to the soil, and to their being more or less frequently eaten down by cattle grazing in the pastures. It is frequently cultivated for the beauty of its flowers, when their colour often becomes paler, sometimes white, and their foliage larger and more luxuriant. *Prof. Henslow* has observed the petals sometimes turn to a bunch of leaves.

*** *Flowers solitary. Capsule opening at the extremity with three or five valves, within the calycine segments.*—(*Wahlenbergia*, *Schrad.*).

9. *C. hedera'cea*, Linn. (Fig. 375.) *Ivy-leaved Bell-flower.* Stem weak, thread-like, branched; leaves smooth, stalked, sub-rotundate, cordate, with angular toothed lobes.

English Botany, t. 73.—English Flora, vol. i. p. 293.—Hooker, British Flora, vol. i. p. 117.—Lindley, Synopsis, p. 136.

Root small, branched, fibrous. *Stem* trailing, slender, thread-like, much branched, angular, entangled together, and extending itself some distance. *Leaves* numerous, opposite, or alternate, smooth, shining pale green, on long slender angular footstalks, somewhat rounded, with a heart-shaped base, angularly lobed in a tooth-like manner, acute, having three principal ribs, with numerous fine branched lateral veins. *Flowers* from the axis of the branched stem and leaves, and terminal on long slender angular stalks, at first drooping, becoming erect, solitary. *Calyx* of five slender awl-shaped segments. *Corolla* a delicate pale blue, bell-shaped, in five acute spreading lobes. *Stamens*



375

Campanula hederacea.



376

Prismatocarpus hybridus.



377

Lonicera caprifolium.



378

Lonicera periclymenum.



379

Lonicera xylosteum.



380

Rhamnus catharticus.

about half as long as the corolla. *Filaments* dilated and hairy at the base, slender, and smooth above. *Anthers* oblong, of two valves. *Pistil* nearly as long as the corolla, smooth below, hairy above. *Stigma* two-cleft, rolled back. *Capsule* almost globose, smooth, the calyx attached about one-third from the top, opening at the apex between the calyx with either three or five angular teeth. *Seeds* numerous, small, ovate.

Habitat.—Moist shady banks and woods. Abundant in Devonshire, Cornwall, the Scilly Isles, and Wales; in Sussex, (plentiful), Hampshire, Oxfordshire, Worcestershire, Essex, Epping Forest, near Theydon Bois.—*Mr. H. Cole*. Near Derwent Hall, Ashopton, Derbyshire.—*R. D.* In Scotland, on the south banks of the Clyde.—*Dr. Brown*. In Ireland, on the Sugar-loaf Mountain County of Wicklow.—*Dr. Stokes* and *Mr. John Nuttall*. Near Bandon, County of Cork, and in Glencree, between Enniskerry and Lough Bray, near the Copsewood, abundant.—*Mr. J. T. Mackay*.

Perennial; flowering from June to August.

This is included by Schrad in his genus *Wahlenbergia*, which is distinguished by the capsule being half superior, and opening at the apex, and not on the side, as in the genus *Campanula*; in this particular it agrees, and has a claim to be in that genus, instead of *Campanula*, but its habit is quite different; and on this account it is retained in the present genus, but doubtingly as to its being its proper place.

The Ivy-leaved Bell-flower is extremely elegant and delicate in its structure and habit, when

“ Over the font's damp, mossy stones they grew

Luxuriantly.

These little bells of faint and tender blue,

Which gracefully

Bent their small heads in every breeze which strayed,

From lawny sunshine to the woodland's shade.”—

Romance of Nature.

We have seen it spread its delicate and tender form over ornamental mossy rock work, and damp banks, in most elegant tufts of greater beauty than we remember to have seen any plant, having the same habit; it far surpasses in elegance and gracefulness of form and flower. the Ivy-leaved snap dragon: but they may be grown together with great advantage, and clothe those places, which otherwise would be naked and barren, with a varied green tapestry, constantly scattered over with beautiful flowers during the summer months.

GENUS XXXIII. PRISMATO'CARPUS.—L'HERITIER.

Corn Bell-flower.

Nat. Ord. CAMPANULACE'Æ. JUSS.

GEN. CHAR. *Calyx* five-cleft. *Corolla* wheel-shaped, with a flat limb. *Capsule* oblong, prismatic, two or three celled, opening near the top.—Name from the shape of the capsule.

1. *P. hy'bridus*, L'Heritier, (Fig. 376.) *Corn Bell-flower*. Stem erect, simple, or branched; leaves oblong, waved, and crenated; flowers solitary; corolla spreading, shorter than the lanceolate segments of the calyx.

Lindley, Synopsis, p. 135.—*Campanula hybrida*. Linn.—English Botany, t. 375.—English Flora, vol. i. p. 294.—Hooker, British Flora, vol. i. p. 118.

Root tapering, with long slender branched fibres. *Stem* erect, from six to twelve inches high, angular and rough, with short rigid hairs, simple, or more or less branched, especially from the base, which are frequently long, spreading, ascending towards the extremity, leafy. *Leaves* alternate, sessile, the margins waved, and somewhat crenated, rough, especially near the margin, with short rigid hairs, the lower ones obovate, the upper oblong. *Flowers* terminal, solitary, or sometimes three or four terminate the stem and lateral branches. *Calyx* of five narrow lanceolate spreading rough segments. *Corolla* wheel-shaped, much shorter than the calyx, of five ovate spreading segments, of a deep blue, paler outside and within at the base. *Stamens* five, with slender *filaments*, not dilated at the base, smooth. *Anthers* oblong, pale yellow. *Pistil* shorter than the corolla. *Style* slender, and with the two or three cleft. *Stigma* somewhat hairy. *Capsule* oblong, triangular, rough, with minute points, formed of three obtusely angular columns, crowned by the persistent calyx, and opening near the top with oblong valves, which separate beneath, and curl upwards. *Seeds* numerous, pale, shining, brown, ovate, attached by the extremity to the central placenta.

Habitat.—Corn fields, on a chalky or clay soil; not very common, and chiefly in the middle and southern parts of England.

Annual; flowering in July and August.

This species is nearly allied to the *P. Speculum*, or *Venus's Looking-glass*, a plant very common on the continent, though not found with us. It has linear calyx segments, shorter than the ovate acute segments of the corolla, more hairy, and mostly a larger stouter plant.

The capsule of this genus is remarkable, it is formed of three cylin-

dricul cells, with the margins united to a central thread-like placenta, common to all three, to which is attached by their pointed base the numerous pendent seeds. The cells are opened for the escape of the seeds by three valves, of an obovate or rather ligulate form, attached to the base of the calyx; between the cells these closely cover over the openings into the cells, until the seeds are ripe, when the central broadish rib with which each valve is furnished contracts and curls up the valve, leaving the opening free for the escape of the seeds; the capsule has then a very singular appearance, the calyx and recurved valves supported on three lateral and one central column: the openings in the cells are formed by a portion taken out as it were on each side, leaving the rib of each as a support for the calyx and valves, which form a protecting cover to prevent rain, &c. getting to the seeds in the cells; and the central column is the placenta attached to the base of the pistil. Here may we truly say that

“ Dame Nature is the kindest mother still,
Though always changing.”

GENUS XXXIV. LONICE'RA.—LINN. *Honey-suckle.*

Nat. Ord. CAPRIFOLIACE'Æ. JUSS.

GEN. CHAR. *Calyx* of five small teeth. *Corolla* tubular, with an irregular five-cleft limb. *Stigma* capitate. *Berry* from one to three celled, one or many seeded.—Named in honour of Adam Lonicer, a German Botanist.

* *Flowers* in whorled heads. *Berry* crowned by the persistent calyx. *Stem* climbing. (*Caprifolium*, Juss).

1. *L. Caprifolium*, Linn. (Fig. 377.) *pale perfoliate Honey-suckle.* Whorls of flowers, in sessile, terminal, and axillary clusters; leaves deciduous, the upper ones united at the base, perfoliate.

English Botany, t. 799.—English Flora, vol. i. p. 326.—Hooker, British Flora, vol. i. p. 118.—*Caprifolium perfoliatum*.—Lindley, Synopsis, p. 131.

Stem woody, climbing, several feet high, by twisting itself round the stems of other plants, taking a course from right to left, it is round, smooth, and generally a little branched. *Leaves* obovate, or roundish, sometimes waved on the margin, quite smooth, bright green, and shining above, beneath of a dull pale glaucous hue, with a prominent midrib, and numerous branched slender netted veins, the lower ones mostly opposite, on short footstalks, the upper ones united at the base,

those terminating the branches cupped at the base. *Inflorescence* terminal and axillary whorls, of about six sessile flowers in each. *Flowers* highly fragrant, about two inches long, of a yellowish colour, with a pale pink tube, sometimes almost white. *Calyx* cup-shaped, the limb of five angular teeth. *Corolla* irregular, with a long tube dilating upwards, swelling more on one side than the other, the limb of five deep linear obtuse segments, one cut deeper than the others, recurved, two of the segments forming as it were one lip, and three another. *Stamens* of irregular lengths, the *filaments* about the top of the tube. *Anthers* oblong, yellow. *Style* about as long as the corolla, slender. *Stigma* capitate. *Berry* ovate, of a tawny yellowish hue, quite smooth, crowned by the persistent calyx.

Habitat.—Woods and thickets; rare. Oxfordshire and Cambridge-shire, in England; Collinton Woods, and Corstorphine Hill, near Edinburgh, and in hedges at Dalmeny, Linlithgowshire, Scotland.

Shrub; flowering in June and July.

The pale flowered Honey-suckle is frequent in almost all the woods and shady places in Italy, and is not unfrequent in many other parts of the Continent. It was formerly thought to possess wonderful power in the cure of ulcerated legs of aged persons, but it is not now thought to be any remedy for the cure of old age. The specific name of *Caprifolium* is from the leaves being the favourite food of goats (*Capra agagrus*.)

2. *L. Pericly'menum*, Linn. (Fig. 378.) common Honey-suckle, or Woodbine. Whorls of flowers in terminal stalked heads; leaves deciduous, all distinct, petiolated.

English Botany, t. 800.—English Flora, vol. i. p. 327.—Hooker, British Flora, vol. i. p. 118.—*Caprifolium Periclymenum*.—Lindley, Synopsis, p. 131.

Stem woody, climbing, smooth, twisting itself from right to left around the stem and branches of trees, &c. to a considerable length, having numerous opposite branches and leaves. *Leaves* ovate lanceolate, on short footstalks, a shining green above, glaucous beneath, with a prominent mid-rib, and five branched lateral veins; sometimes the leaves, especially on the under side and the extremity of the branches, are more or less scattered over with simple hairs, and on plants grown by the sea they are mostly more glaucous, and become somewhat succulent; and a variety is mentioned having the leaves sinuated like those of the oak, and variegated. *Inflorescence* in terminal stalked heads, of numerous whorled flowers. *Flowers* about an inch and half long, irregular, very fragrant in the evenings, or after a shower. *Calyx* small, each having at its base a small bractea, and, like the calyx, scattered over with glandular hairs, the limb of five obtuse segments. *Corolla* with a long tube, dilating upwards, swelling on one side,

externally of a darkish red or yellowish, but varying greatly in its colour, sometimes a pale straw colour, more or less clothed with glandular hairs, the limb very unequally divided into two segments, the upper one reflexed upwards, broad and notched at the extremity, in three rounded shallow lobes, the lower segment narrow, linear, obtuse, reflexed downwards, the tube scattered over on the inside with simple hairs, and on the lower part of it with a considerable number of small glands, which secrete the fragrant perfume. *Stamens* of irregular lengths, rising from the top of the tube, nearly as long as the corolla. *Filaments* slender, smooth. *Style* as long as the corolla, slender, smooth. *Stigma* capitate, notched. *Berry* globular, of a bright shining red, sometimes roughish, of a bitter nauseous taste.

Habitat.—Woods and hedges; frequent.

Shrub; flowering from June to October.

The Honey-suckle varies considerably in the size of its plants, and in the smoothness and the colour of its flowers; these circumstances depending upon the more or less open or close situation, and the kind of soil in which it grows. The fragrance of its flowers is most grateful, especially in the morning or evening, or after a refreshing shower; and this is owing to the volatile oil secreted by the glands mentioned above, being rapidly dissipated by the heat of the sun, and scarcely sensible; but when it is less rapidly evaporated either in the cool of the day, or after a shower, it is then perceived, and its balmy fragrance adds no little to the pleasures of a ramble at such a season—for

“ Look where'er you may, a tranquillising soul
Breathes forth a life-like pleasure o'er the whole;
The shadows settling on the mountain's breast,
Recline, as conscious of the hour of rest;
Stedfast as objects in a peaceful dream,
The sleepy trees are bending o'er the stream;
The stream half veiled in snowy vapour flows
With sound like silence, motion like repose.”

The Honey-suckle is cultivated for a variety of useful as well as ornamental purposes; but never to our minds is it more beautiful or ornamental than when its branches are nicely arranged on the face of a little white-washed cottage, overhung by its thick thatched roof, or the pliant branches interwoven in the lattice work around the labourer's door: the sweet fragrance of its fresh blown flowers is wafted in gentle puffs around the frugal board, and repays in two fold pleasures the care bestowed upon its growth and training.

**** Flowers in pairs. Calyx deciduous, not crowning the Berry. Stem erect.**

3. *L. Xylos'teum*, Linn. (Fig. 379.) upright Fly Honey-suckle.

Peduncles bearing two downy flowers; berries distinct; leaves ovate acuminate, downy.

English Botany, t. 916.—English Flora, p. 329.—Hooker, British Flora, vol. i. p. 119.—Lindley, Synopsis, p. 132.

An erect, bushy, much branched *shrub*, four or five feet high, the bark pale, branches opposite, their extremities downy. *Leaves* numerous, opposite on short footstalks, ovate, with an acuminate point, the lower ones obtuse, and the younger ones at the extremity of the branches lanceolate, clothed with a close soft down, especially beneath, where it is of a pale colour, mid-rib distinct, with slender lateral veins. *Flowers* axillary, in pairs, elevated on a short downy stalk. *Bractea* two or four small scales, united together, and forming a small cup around the base of the flowers. *Calyx* small, in five obtuse short segments. *Corolla* short, the limb of two lips, the upper one of four short obtuse lobes, the lower one narrow, ligulate, cream coloured, sometimes pinkish outside, without fragrance, the tube somewhat funnel-shaped, with the lower part swollen on one side, clothed on the outside with short soft down, nearly smooth within, except in the tube; it is very downy. *Stamens* shorter than the corolla, its filaments downy, inserted into the top of the tube. *Anthers* oblong. *Pistil* as long as the stamens. *Style* downy. *Stigma* capitate. *Berry* bright scarlet, oval.

Habitat.—Thickets; near Sewenshele, Northumberland.—*Wallis*. Certainly wild near Houghton Bridge, four miles from Arundel, Sussex.—*Mr. Borrer*.

Shrub; flowering in July.

This small shrub, not distinguished for its beauty, is called Fly Honey-suckle, from the distant resemblance of its flowers to the figure of a Fly. It is frequently planted in shrubberies and plantations, and it is probable that it has escaped and established itself in the stations above mentioned as a wild plant. It is frequent on most parts of the Continent, especially in the mountain woods of Italy.

GENUS XXXV. RHAMNUS.—LINN. *Buckthorn*.

Nat. Ord. RHAMNÆÆ. JUSS.

GEN. CHAR. *Calyx* urceolate, the limb four or five-cleft. *Corolla* of four or five petals, or wanting. *Stamens* opposite the petals, and with them inserted into the tube of the calyx. *Styles* from two to four, united or distinct. *Fruit* fleshy, of two to four cells, each cell containing a single seed.—Name from the Greek word ραμνος, a branch, from being numerously branched.

1. *R. catharticus*, Linn. (Fig. 380.) *common Buckthorn*. Spines terminal; leaves ovate, sharply serrated, sub-cordate at the base; flowers four-cleft, diœcious.

English Botany, t. 1629.—English Flora, vol. i. p. 328.—Hooker, British Flora, vol. i. p. 119.—Lindley, Synopsis, p. 73.

A spreading *shrub*, with nearly opposite or alternate rigid branches, terminating in a strong spine, the branches round, with a smooth bark. *Leaves* numerous, opposite, sometimes alternate, on downy channelled footstalks, ovate, or ovate-lanceolate, with a more or less heart-shaped base, strongly marked with its mid-rib and four or six lateral parallel veins, pale on the under side, a brightish green above, the margins sharply and finely serrated, more or less thickly scattered over with simple hairs, the younger leaves have each at the base of the footstalk a pair of small lanceolate *bractea*, which soon fall away. *Flowers* in numerous crowded fascicles on the last year's branches, of a yellowish green colour, diœcious, each elevated on a slender footstalk. *Barren flowers* bearing stamens only, have the *calyx* tube somewhat bell-shaped, the segments four, ovate-lanceolate, with a mid-rib and two marginal ones. *Petals* ovate oblong, shorter than the calyx segments, and alternating with them, inserted at the top of the tube of the calyx, with the *stamens* before them, rising on four awl-shaped filaments, bearing ovate two celled *anthers*; at the bottom of the tube of the calyx is a small abortive *germen*, with its short style and *stigma*. *Fertile flower*, with a bell-shape tube contracted at the mouth, its four pale ovate-lanceolate three ribbed segments erect. *Petals* small, linear, incurved above, inserted with the short abortive *stamens* before them into the mouth of the calyx tube. *Style* short, deeply four-cleft. *Stigmas* small, spreading. *Berries* bluish black, surrounded at the base with the persistent calyx, somewhat fleshy, of four (or less by abortion) cartilaginous cells, each containing a single erect *seed*, ovate, marked with a deep longitudinal suture in front, rounded at the back, and terminating in an acute curved cartilaginous point over the foramen, *embryo* nearly as long as the seed, with flat kidney-shaped *cotyledons*, with an inferior *radicle*, surrounded by the *albumen*.

Habitat.—Hedges, woods, and thickets; common in England; about Dumfries, Scotland; Islands in Lough Erne, near Enniskillen; on a limestone rock east side of the Lee, two miles above Cork, Ireland.—*Mr. J. Drummond*.

Shrub; flowering in May and June.

Buckthorn berries were formerly much used as a cathartic medicine, but their operation is so violent, and produces so much griping pain, that they are now only used to make a syrup to add as auxiliary to purgative enemias; when, however, taken internally in any form, they are productive of considerable dryness of the mouth and throat, causing great thirst, which unpleasant effects are not relieved even with copious

diluents. The juice expressed from the unripe berries has a faint unpleasant odour, a bitterish acrid nauseous taste, and is of a yellowish saffron colour ; it is used as a pigment, and a dye for staining paper, &c. ; the juice of the riper berries is of a deep green, from it, by the addition of a little alum or lime water, and a portion of gum arabic, is formed by evaporation the *sap green*, used by painters. If the berries are gathered when quite ripe, the juice is purple instead of green, containing a portion of saccharine matter ; it soon ferments, forming acetic acid, and the juice becomes of a reddish colour. The dried berries sold in the shops under the name of French berries, are the unripe fruit of this plant, which is frequently mixed with the useless fruits of other plants, which do not possess the same property ; but they are readily known by not having four cells, as the fruit of this plant has. The bark also affords a good yellow dye.

2. *R. Fran'gula*, Linn. (Fig. 381.) *Berry-bearing Alder, or Alder Buckthorn*. Without spines ; leaves ovate, acute, entire ; flowers all perfect.

English Botany, t. 250.—English Flora, vol. i. p. 329.—Hooker, British Flora, vol. i. p. 119.—Lindley, Synopsis, p. 73.

An erect *shrub*, with round, smooth, alternate, unarmed *branches*, mostly long, slender, leafy, and clothed with a soft down at the extremities, the bark a smooth shining purplish brown. *Leaves* alternate, ovate, or roundish, with an acute or acuminate point, round at the base, the margin entire, of a smooth shining deep green, paler beneath, with a strong mostly hairy mid-rib, and numerous straight parallel veins, smooth or hairy, footstalk channelled above, downy, each having at the base a pair of awl-shaped downy *bractea*, which shortly fall away. *Flowers* perfect, (containing both stamens and pistil), mostly numerous in fascicles from the axis of the leaves, each elevated on a slender, smooth, or downy stalk, with a minute *stipule* about mid-way. *Calyx* of five obovate downy erect segments, larger than the five alternating *petals*, which have a waved margin attached into the contracted throat of the calyx, with the short *stamens* before them, and partly enveloping them. *Anthers* ovate, of two cells. *Stigma* nearly sessile, capitate, cloven. *Fruit* a dark purple, somewhat fleshy berry of two or three single seeded cells, surrounded at its base with the persistent calyx, contracted into a shield-like plate.

Habitat.—Woods and shady places ; frequent in England. Near Anchincruive, Ayrshire, Scotland.—*Mr. Smith*. On a small island, called the Creagh Bog, in Lough Beg, County of Derry, Ireland.—*Mr. D. Moore*.

Shrub ; flowering in May and June.

The Black Alder contains in all its parts, but particularly in the bark, a bitter astringent principle, which has been used in the form of



381

Rhamnus frangula.



382

Enonymus europaeus.



383

Impatiens noli-tangere.



384

Viola hirta.



385

Viola odorata.



386

Viola palustris.

infusion and decoction for the cure of ague and dropsy, it is also used as a gargle in inflammatory affections of the throat. If taken in too large a dose it excites vomiting, purges violently, and causes much griping. It is not now used, except by the country people and herbalists, and requires cautious administration. The berries, so far as their medicinal properties are concerned, are similar to the last, but do not give the same useful colour, and are often mixed with them; a fraud which may be easily detected, from the difference in their shape and number of cells, this having but two, while the former has four.

It is remarked by Dr. Murry, of Gottingen, that he has found the chopped leaves of this plant, heated over the fire, the best remedy with which he is acquainted to disperse milk in the breasts; at all events it is a harmless remedy, how useful it may be we cannot say.

The berries and bark, both of this and those of *R. catharticus*, are esteemed as purgatives in veterinary practice. Half an ounce of the bark boiled in some ale is frequently given to cattle, and acts as a brisk cathartic, or a few seeds answer the same purpose. Both the bark and berries are used by dyers for giving a yellow colour to woollen goods, and by the addition of preparations of iron a black colour is obtained. The wood is esteemed for burning into charcoal, particularly by the manufacturers of gunpowder; and the flowers, like several other species of this genus, are great favourites with the bees: for Evelyn says that the "honey-breathing blossoms afford a marvellous relief to bees."

GENUS XXXVI. EUONYMUS.—LINN. *Spindle tree.*

Nat. Ord. CELASTRI'NEÆ. R. BROWN.

GEN. CHAR. *Calyx* flat, four or five-cleft, with a peltate disk at the bottom. *Petals* four or five, inserted into the margin of the disk. *Stamens* four or five, alternating with the petals, and inserted into the disk. *Capsules* with three or five angles, and as many cells. *Seeds* one in each cell, with a coloured fleshy *arillus*, partly or entirely covering it.—Name from "Euonymus, mother to the Furies, in allusion to the injurious effects produced by the fruit of this plant."

E. Europæus, Linn. (Fig. 382.) *common Spindle tree or Prick-wood.* Flowers mostly four-cleft; petals acute; branches smooth; leaves ovate-lanceolate, smooth, finely serrated; capsule obtusely angular, smooth.

English Botany, t. 362.—English Flora, vol. i. p. 330.—Hooker, British Flora, vol. i. p. 119.—Lindley, Synopsis, p. 74.

An erect shrub, from four to eight feet high, with green smooth bark, and numerous straight *branches* opposite, divaricating, of four obtuse angles when young, afterwards becoming round. *Leaves* opposite, ovate-lanceolate, quite smooth, shining, the margins finely serrated, on a short footstalk, with a strong mid-rib and slender branched veins. *Stipules* awl-shaped, very small, and soon falling away. *Inflorescence* a small cyme of few flowers, on a naked peduncle from the axis of the leaves. *Flowers* small, greenish white, on short slender footstalks, having a foetid odour; around the base of each footstalk is a thickened glandular ring. *Calyx* of four or five flat obtuse short segments, having at the bottom a flattish shield-like glandular disk. *Petals* four or five, alternating with, and much larger than the calyx, ovate oblong, whiteish green, waved and veiny, inserted under the margin of the disk. *Stamens* four or five, from the middle of the disk, filaments short, bearing rather large yellowish *anthers*, formed of two cells, and attached by their base to the filament. *Style* short. *Stigma* obtuse, emarginate. *Capsule* of a fine rose colour, from three to five cells, but mostly four, smooth, obtusely angular, surrounded at the base by the persistent calyx and glandular disk, and crowned by the persistent pistil, each cell bursting at the outer angle, and containing a single ovate ascending *seed*, surrounded either entirely or only in part with a succulent orange-coloured *arillus*, the *albumen* fleshy, surrounding a straight *embryo*, cotyledons flat, large, veiny, having a short inferior radicle.

Habitat.—Woods and hedges; not unfrequent in England, and the South of Ireland; King's Park, near St. Anthony's Well, and near Craigmillar Castle, near Edinburgh, Scotland.

Shrub; flowering in May.

The wood of the Spindle tree was formerly in great request for making spindles and distaffs; it is now chiefly used for skewers, tooth-picks, and other small articles, as well as by the musical instrument makers, &c. All parts of the plant have a disagreeable smell, and are said to be poisonous to animals that feed upon it, except the goat; and when taken by man it acts as a strong purgative, and if in a large dose as an emetic. The seeds, when powdered and sprinkled amongst the hair, have been used and found an effectual remedy for cleansing it of all troublesome intruders, and may be employed with equal advantage in the destruction of other vermin.

It is an ornamental shrub in plantations mixed with other trees. Its rather large capsules, which are generally of a fine rose colour, sometimes almost white, look very handsome amongst its shining leaves, and continue for a long time upon the trees.

GENUS XXXVII. IMPATIENS.—LINN. *Balsam.*

Nat. Ord. BALSAMINÆ. A. RICHARD.

GEN. CHAR. *Calyx* of two deciduous segments. *Petals* four, very unequal, the lower one elongated at the base into a spur. *Anthers* united, three of which are two celled, and two one celled. *Stigma* five, united. *Capsule* long, tapering, of five elastic valves, bursting suddenly at the base, and rolling spirally.—Name (*impatient*) from the circumstance of the valves suddenly flying open when touched.

1. *I. Noli-me-tan'gere*, Linn. (Fig. 383.) *yellow Balsam, or Touch-me-not*. Peduncles solitary, axillary, many flowered, shorter than the leaves, and spreading beneath them; spur of the flower recurved at the apex; leaves ovate, petiolated, coarsely serrated; stem swelling at the joint.

English Botany, t. 937.—English Flora, vol. i. p. 299.—Hooker, British Flora, vol. i. p. 120.—Lindley, Synopsis, p. 60.

Root fleshy, with numerous spreading fibres from the joints. *Stem* erect, from one to three feet high, round, smooth, pellucid, very succulent, swollen at the joints, quite smooth, like all the rest of the plant, of a pale yellowish green, except about the joints, where it is pinkish, branched, opposite, or mostly alternate. *Leaves* opposite or alternate, on footstalks of variable lengths, ovate or ovate oblong, sometimes tapering at the base, of a bright green, glaucous, and paler beneath, the margin coarsely serrated, some of the lower ones mostly lengthened into ciliæ, mid-rib strong, lateral ones very slender. *Peduncles* slender from the axis of the leaves, solitary, branched, shorter than the leaves, bearing from three to six pendulous flowers, each partial flower stalk with one or two small awl-shaped bractea, *Flowers* large, pale yellow, spotted with scarlet, very handsome. *Calyx* of two ovate-lanceolate pellucid segments, having a mid-rib, soon falling away after the flower has expanded. *Corolla* very irregular, of four petals, the upper one erect, flat, somewhat three-cleft, with a point in the middle, forming the upper lip, the lower a long tubular spur or nectary, recurved about one-third from the apex, the mouth obliquely cut, terminating beneath in a point, the upper edge attached to the receptacle, the lateral petals much larger than the others, lobed, each accompanied at its base with a small entire oblong petal, all finely veined. *Stamens* five, on short curved filaments, thickened and somewhat hairy above. *Anthers* large, united together when ripe, the three lower ones with two perfect cells, the two upper with one cell only, the valves opening lengthwise. *Pollen* very

abundant. *Stigma* five, sessile, united together into a cone-shape. *Fruit* a long pointed *capsule*, of five cells, with thin membranous divisions around the central placenta, having five *valves*, separating from the base to the apex, curling themselves suddenly when ripe by the least agitation, and throwing the seeds for some distance. *Seeds* numerous, ovate, suspended in the capsule, without *albumen*, having a straight *embryo*, with a superior radicle.

Habitat.—Moist shady woods; rare. Fountain's Abbey, and other places in Yorkshire; Westmoreland; Guildford, Surrey.—*Rev. J. Jenyns*. Abundant in a wet glen at Castlemilk, near Glasgow.—*Mr. Hopkirk*.

Annual; flowering in July and August.

The whole plant possesses a degree of acidity, from which circumstance it is by no means a food palatable to most cattle. The structure of its flowers, and particularly its capsules, are worthy of minute examination; for when they are quite ripe, the least motion of the plant, more especially when the sun is upon them, causes the elastic power which they possess to separate the valves at the base, and suddenly rolling or rather curling up throw the seeds some distance from them, a circumstance which is thus noticed by Darwin in his Botanical Garden, and this is the reason that it bears the common name of Touch-me-not, by which it is known.

“With fierce distracted eye *Impatiens* stands,
Swells her pale cheeks and brandishes her hands;
With rage and hate the astonished groves alarms,
And hurls her infants from her frantic arms.”

GENUS XXXVIII. VIO'LA.—LINN. *Violet*.

Nat. Ord. VIOLA'CEÆ. DE CAND.

GEN. CHAR. *Calyx* of five sepals, unequal and apendiculated at the base. *Petals* unequal, the lower one spurred at the base. *Stamens* with dilated *filaments*. The *anthers* united around the pistil, the two lower ones with processes at the base. *Capsule* of one cell, opening with three elastic valves.—The derivation of this name is variously stated; the most probable one appears to be from *ἰὼν*, as it is said to have been first noticed at Ionia.

* *Stemless*, or nearly so.

1. *V. hir'ta*, Linn. (Fig. 384.) *hairy Violet*. Leaves heart-shaped, downy above, beneath and the petioles hairy. *Calyx* sepals obtuse, lateral petals with a hairy central line. *Capsule* hairy, upon a prostrate peduncle without runners.

English Botany, t. 894.—English Flora, vol. i. p. 302.—Hooker, British Flora, vol. i. p. 120.—Lindley, Synopsis, p. 36.

Root strong, round. *Runners* very short, or wanting, but not taking root. *Leaves* numerous, from the axis of a lanceolate, simple, or toothed *stipule*, on a long channeled hairy footstalk, oblong, heart-shaped, more or less deeply cut at the base, the margin crenated, downy above, beneath hairy, with a strong mid-rib and lateral branched veins. *Flower stalk* longer than the leaves, angular, simple, smooth, bearing below its middle a pair of lanceolate smooth *bractea*. *Flower* solitary, drooping. The *calyx* of five obtuse smooth pieces. *Corolla* palish blue, with darker veins, of five irregular petals, scentless, the two upper ones narrowest, and mostly entire, as are the two lateral ones, each of which has a central line of short white hairs, the lower petal larger and notched. *Anthers* surrounding the style, but not united, each tipped with an orange-coloured thin membrane. *Style* short. *Stigma* an oblique point. *Capsule* roundish, hairy, of three cells, and numerous *seeds*; its footstalk elongates after flowering, becomes prostrate on the earth, and mostly buries the capsules beneath the soil.

Habitat.—Woods, pastures, and banks; not uncommon in England, especially in a calcareous soil. Rare in Scotland, and apparently only about Edinburgh. Sand fields in Ireland, on banks by the sea between Clontarf and Kilbarrick Church, near Portmarnock, and elsewhere about Dublin, and woods at Blarney, near Cork.

Perennial; flowering in April and May.

It is probable this species is frequently overlooked as *V. odorata*, from which, upon examination, it will be found to differ, especially in the want of runners, in its hairiness, and its being spreading, the want of odour in the flowers, the situation of the bractea, and the shape and hairs upon the capsules.

2. *V. odorata*, Linn. (Fig. 385.) *sweet Violet*. Leaves broadly heart-shaped, nearly smooth, as well as the petioles. Calyx sepals obtuse, lateral petals with an hairy line. Capsule smooth, on a prostrate peduncle. Runners long, creeping.

English Botany, t. 619.—English Flora, vol. i. p. 302.—Hooker, British Flora, vol. i. p. 120.—Lindley, Synopsis, p. 35.

Root with long branched fibres, sending out numerous long runners, and putting out at intervals long fibrous roots, where leaves and flowers spring, and a new plant is established, the whole plant smooth, or scattered over with a few short hairs, which are deflexed. *Leaves* arising from the axis of simple lanceolate or ovate-lanceolate toothed *stipules*, on long channeled footstalks, broadly heart-shaped, with a mid-rib, and lateral veins nearly of the same size, the margin more or less deeply crenated. *Flowers* single, on a round or somewhat angular

footstalk, having a pair of simple lanceolate or awl-shaped *bractea* about the middle, segments of the *calyx* obtuse, slightly extended behind the insertion. *Corolla* a fine blue, white at the base, and the lower and two lateral petals penciled with dark purple veins, sometimes white, with purple veins, as well as the spur; of a rich fragrance, the lower petal largest, with a dark obtuse spur at the base, and notched at the apex, the lateral petals sometimes notched, and having at their base a few short white hairs, either in a line or a tuft, the two upper smallest, entire, ovate, oblong. *Stamens* nearly sessile, of two longitudinal cells, bursting half way down from the apex, and extending beyond them is a thin membranous lanceolate appendage, tipped with orange, and extending to the end of the style, the two lower ones having at their base a broad curved green appendage extending into the spur. *Style* as long as the stamens, recurved at the top and pointed, tipped with the *stigma*. *Capsule* ovate oblong, triangular, of three valves, smooth, bursting elastically, and containing numerous pale *seeds*, its footstalk elongating after flowering, and lying prostrate on the ground when ripe.

Habitat.—Woods, banks, pastures, and shady lanes; frequent in England; rare in Scotland; banks near Slatford Aqueduct, and Colmont Woods, near Edinburgh; not unfrequent in Ireland.

Perennial; flowering in March and April.

The Violet is a well known garden plant, producing its rich dark purple fragrant flowers early in the Spring.

“ Ye Violets that first appear,
By your pure purple mantles known,
Like the proud virgins of the year,
As if the Spring were all your own;
What are ye when the Rose is blown ?”—

Sir H. Wotton.

Many beautiful varieties are produced as the white and light blue, and these by cultivation become very double, but we think the deep blue by far the most beautiful; for, as Byron says,

“ The sweetness of the Violet's deep blue eyes,
Kiss'd by the breath of heaven, seems colour'd by its skies.”

The petals have a somewhat laxative property and bitterish taste, and enter into the formation of a syrup, which, in combination with oil of almonds, is considered useful in relieving coughs in young children; and the syrup is also used as a delicate test in chemical investigations, to detect the presence of alkalies or acids: by the former it is changed into green, and by the latter red. The petals of this, and sometimes of other species, are occasionally found wanting, but the capsules and seeds are perfected.

We never meet with the beautiful Violet without admiring the construction of its flowers, and the admirable adaptation of its various parts to the fulfilment of the offices assigned to them by the wisdom of the Great Parent of all things. In taking the flower in the hand, we are first struck with the lateral petals having at the base a number of white hairs, which reach over the mouth, and seem to protect it from the intrusion of insects that might disturb the process of the works below, we mean in the stamens and pistils. We next see that the lower petal has at its base an elongated spur-like sack, containing a quantity of fluid, and immersed in this are two curved elongated appendages, which are from the base of two of the stamens; these will be found to terminate in a naked glandular substance, over which the cuticle does not extend, but is the prolongation of the inner substance, composed of a number of tubes, &c., and which appear to absorb the fluid secreted in the spur, and apply it to the increased demand of nutriment to the stamens, and probably also the ovules in the germen during the period of fecundation; this supposition is strengthened from the fact, that after the discharge of the pollen no more fluid is secreted in the spur. If we next examine the stamens, we find that they surround the germen and pistil, and that each is surmounted by a pointed membrane, which unfolds the upper part of the style, and forms a kind of tube. We find also that the stamen is formed of two long cells, which burst longitudinally at the top, and that each cell has at its apex a broadish bristle. Now this very admirable contrivance appears to be formed for the purpose of conveying the minute grains of the discharged pollen to the stigma, to prevent its dispersion around, and for the greater certainty of securing its application to the stigma, which is curved for its more easy accomplishment; for upon examination of the pistil, we find it also of a very curious construction. As already stated it is thickened upwards, and curved at the extremity, and at the apex there is a small round orifice, which opens into a short hollow space, which contains a fluid, keeping moist the surface of the stigma, which is thus surrounded with a kind of hood; the upper or swollen part of the stigma is filled with the peculiar cellular structure proper to the stigma, but is again hollow in the lower contracted part. From the peculiar formation of the covered stigma, it will be seen what use there is in the peculiar formation of the stamens for the directing of the pollen to come in contact with the surface of the stigma; and what at first appears a useless appendage, will be seen to be a very curious and admirable structure, to accomplish an important purpose in the economy of the plant: but this is only one instance of the beautiful adaptation of one part to another, the same more or less unvaried contrivance for the accomplishment of the same purpose will be found in the whole of the species of this interesting genus. But were we to examine the different parts of any

plant, we should find the same display of wisdom and admirable design, even in the minutest of the varied vegetable forms. There is another curious circumstance connected with the plants of this genus, we mean the capsules, and the bursting open of their valves with a sudden elasticity. If a transverse section of the more or less angular capsule is made, it will be seen to consist of one cell with three valves, and that each valve has at the angle a stout column of cellular matter, thicker in the lower part than above, and its two sides of a thin membranous substance, which are united to those of the other valve by a very thin transparent membrane. The inner edge of the central column is the placenta, on which the seeds are attached by a very short slender cord, by which they are nourished until they are matured, at which time, when there is no further demand for the continued flow of fluid in the cellular substance or other parts of the capsule, it gradually dries up; but as the cellular column contracts much more than the membranous sides of the valves by drying, it is constantly exerting a power to pull back the valves, which is resisted so long as the thin membrane which unites the edges of the valves has power, which, however, at length gives way, and mostly by a sudden tear, by which motion the seeds now loosely attached are thrown to a considerable distance from the plant. This operation is generally performed during the day, while the sun is shining upon them and drying them, when their elastic power is greatest; for when the humid dew falls upon them a portion of it is absorbed, and consequently the valves become relaxed. We have here endeavoured to describe the structure and use of the parts of a flower of remarkable formation, in the hope that the student of nature will be induced to examine it himself, and not rest satisfied with reading an imperfect account; and he will then find how difficult it is to read with satisfaction the real book of nature, and as difficult to describe even that which we think we know. But let him not rest satisfied with the examination of this plant only, for he will find many others equally familiar to him as the sweet smelling Violet, that will fully compensate him for the trouble bestowed upon its investigation.

3. *V. palustris*, Linn. (Fig. 386.) *Marsh Violet*. Leaves heart or kidney-shaped, quite smooth; calyx segments obtuse; spur very short; lateral petals nearly smooth; capsule smooth, without runners.

English Botany, t. 444.—English Flora, vol. i. p. 303.—Hooker, British Flora, vol. i. p. 121.—Lindley, Synopsis, p. 35.

Root small, branched, and fibrous, without or with very short runners. *Leaves* mostly few in number, quite smooth, on longish footstalks, from the bosom of small thin membranous *stipules*, the footstalk is channeled, and frequently slightly winged near the top, the leaf kidney-shaped, with a heart-shaped base, the margin crenated more or less deeply, paler on the under side and veiny, the veins all

arising from the base, and scarcely branched, sometimes the leaves are longer than broad, with an acute point, which is the variety *β. uliginosa* of Fries. *Flowers* on somewhat angular footstalks, with a pair of lanceolate *bractea* embracing the stem mostly more than half way up, generally toothed, or with glandular hairs. *Calyx* of five obtuse segments, slightly extending beyond the insertion. *Corolla* with a short obtuse spur at the base, inodorous, of a pale blue colour, with purple penciled lines, especially the lower one, and quite smooth, or slightly hairy at the base, but the lateral ones have not a distinct line of hairs, the upper petals rounded, the lower one with an acute point. *Stamens* nearly sessile, of two longitudinal cells, opening towards the apex, and with a thin lanceolate membrane extended beyond them, having an orange-coloured point. *Stigma* obliquely truncated, not pointed and curved, as in the above species. *Capsule* smooth, bluntly angular. *Seeds* numerous.

Habitat.—Bogs and marshy places; frequent in the North of England and Scotland, less common in the South; and in Ireland not unfrequent.

Perennial; flowering from April to July.

** *Furnished with a Stem.*

4. *V. Cani'na*, Linn. (Fig. 387.) *Dog's Violet*. Stem procumbent, at length ascending, channeled, smooth, or slightly hairy; leaves oblong, heart-shaped, acute; calyx segments lanceolate, acuminate; stipules lanceolate, with long ciliated teeth at the base; bractea awl-shaped, entire.

English Botany, t. 620.—English Flora, vol. i. p. 304.—Hooker, British Flora, vol. i. p. 121.—Lindley, Synopsis, p. 35.

β. minor, (Fig. 388) *V. flavicornis*, Smith.—English Flora, vol. i. p. 305.—Forester in English Bot. Supplement. t. 2736.

γ. lactea. Stem ascending; leaves ovate-lanceolate, smooth; stipules toothed. *V. lactea*, Smith. English Botany, t. 445.—English Flora, vol. i. p. 306.—Hooker, British Flora, vol. i. p. 121.—Lindley, Synopsis, p. 35. *V. lancifolia*, Thore. and De Candolle makes it a variety of *V. montana* of Linn. It appears to be the *V. lactea* of Reichenb. *V. persicifolia*, Hartm. *V. stagnina*, Kilaibel in Schult.

Root somewhat woody, with long branched fibres. *Stems* mostly numerous from the same root, and spreading around it, the first flowers mostly blow without any stem, but then shortly appear, and are prostrate at the base, and gradually curving round, until erect at the extremities, smooth, or scattered with hairs, angular, extending from two to six or eight inches long, branched in the lower part, leafy. *Leaves* alternate, quite smooth, or scattered over with hairs, the margins crenated, the under side paler than the upper, and somewhat glaucous, with a mid-rib and branched slender veins, the lower or radical leaves kidney-shaped, or broadly heart-shaped, becoming

oblong, with a broadish point and scarcely heart-shaped base, each on a long channeled footstalk, arising from between a pair of lanceolate *stipules*, each having a mid-rib, and the margins with long hair-like teeth. *Flowers* solitary, axillary, on long angular stalks. *Bractea* awl-shaped, entire above the middle of the stalk. *Calyx* of five linear lanceolate acutely pointed segments, scarcely extended at the base beyond the insertion, each with a mid-rib and two more or less distinct lateral ones. *Corolla* mostly large, of a pale blue, white at the base, and with dark purple simple and branched lines, spur obtuse, and mostly of a greenish white, the upper petals mostly entire, with a few hairs at the base, either in a tuft or in lines, the lower one smooth, and generally notched. *Anthers* nearly sessile, surrounding the pistil, the two lower with curved appendages at their base behind, which extend into the spur, and are scattered over with glands, the cells long, linear, having a thin membranous lanceolate appendage, coloured with orange, extending beyond them, which seems for the purpose of forming a channel to direct the discharged pollen to the stigma at their extremity. *Style* curved at the base, thickening upwards. *Stigma* recurved of two plates, surrounded at the base with a few short white hairs. *Capsule* oblong, of three obtuse angular valves. *Seeds* numerous, ovate, of a white shining satin appearance, attached by their extremity to the inner angle of the valves, and thrown some distance from the plant when ripe, by the sudden separation of the valves.

Habitat.—Woods, banks, thickets, and dry places; frequent.

Perennial; flowering from April to August.

The Dog's Violet is readily distinguished from the sweet one, by the absence of that fragrance which renders the other so great a favourite, and by this having also stems, which are wanting in *V. odorata*. These are the two most obvious characters, and at once distinguish them from each other; but there are numerous states of this plant which appear to depend on their situation of growth, that differ in several respects from each other, as being larger or smaller plants, smooth, or hairy; and the flowers also differ greatly in their size and the intensity of their colour. The most marked of these varieties is the *V. flavicornis*, which has a small yellowish spur; in other respects, except its smaller size and more rigid habit, it is the same as above described.

5. *V. tricolor*, Linn. (Fig. 389.) *Pansy Violet*, or *Heart's Ease*. Stem ascending, angular, branched; leaves deeply crenated, the lower ovate, heart-shaped, the upper oblong; stipules lyrate, pinnatifid; calyx segments shorter than the corolla.

English Botany, t. 1287.—English Flora, vol. i. p. 306.—Hooker, British Flora, vol. i. p. 121.—Lindley, Synopsis, p. 36.

α. vulgaris. Corolla longer than the calyx of a violet, blue, purple,

yellow, or white, colour either simple or mixed, the upper petals mostly coloured.

β. arvensis, (Fig. 390.) Corolla shorter than the calyx, yellow, or white, the upper petals seldom coloured. *V. arvensis*, Sibth. Forst. in English Botany Suppt. t. 2712.

γ. saxatilis, (Fig. 391.) Corolla yellow, longer than the calyx, the plant small. *V. saxatilis*, Schm. *V. Curtisii*, Forst. in English Botany, Suppt. t. 2693.

An extremely variable plant, both as to the size and colour of the flowers. *Root* small, and fibrous. *Stem* erect, "or ascending from two to twelve or more inches high, smooth or hairy, especially in the lower part, branched and leafy, straight or zig-zag, angular, and frequently furrowed. *Leaves* on long flat footstalks, smooth, or hairy, the margins deeply crenated, the lower ones ovate, with a heart-shaped base, the upper ovate, or oblong lanceolate, and somewhat decurrent at the base. *Stipules* large, in pairs at the base of each footstalk, lyrate pinnatifid, the segments narrow, tongue-shaped, hairy and ciliated, generally most numerous on the outer side, the terminal segment large, ovate, entire, or crenated. *Flowers* solitary, on long axillary angular stalks, bearing a pair of small lanceolate *bractea*, which are simple, or with one or two slender teeth at the base. *Calyx* of five linear lanceolate acute segments extended at the base from the insertion, in an oblong, rounded, or notched, sometimes waved or lanceolate prolongation, smooth, hairy or ciliated on the margin, and more or less distinctly three ribbed. *Corolla* longer or shorter than the calyx, and of various colours, the four upper ones entire, the lower one broadest, heart-shaped, and marked from the base with simple or slightly branched purple lines, the lateral ones having at their base a tuft of obtuse inflated hairs. *Stamens* somewhat united in their upper part around the style, of two valves, the margins mostly hairy. *Stigma* surrounded by an inflated hood, opening on one side near the apex with a circular aperture, surrounded with a few short white hairs. *Style* curved at the base, and marked on the under side from the top with a dark line. *Capsule* obtusely triangular, of three valves, opening elastically. *Seeds* numerous, ovate, attached by one end to the placenta.

Habitat.—Banks and cultivated fields; frequent. *β.* corn fields, common. *γ.* South of England and Ireland.

Annual; flowering during the Summer months.

This is an extremely variable plant as to its size, hairiness, and the colour of its flowers. It is said to be annual, biennial, or perennial, according to the circumstances of its growth and cultivation; for it is from this species that the many very beautiful and various coloured sorts are obtained by cultivation that adorn our garden borders: and the successful triumphs of the cultivator, in the production of large

and splendid various coloured sorts are seen at almost every floricultural exhibition in the country. As a low border flower, perhaps few surpass it either in the beauty or variety of its colours, and it continues putting out its blooms during the whole of the Summer months. And may we not in the contemplation of these floral gems, with the poet Smart, exclaim—

“ Immense Creator ! whose all powerful hand
Framed universal being, and whose eye
Saw, like thyself, that all things form'd were good ;
Where shall the timorous bard thy praise begin,
Where end the purest sacrifice of song
And just thanksgiving ?—
O thrice illustrious ! were it not for thee,
Those *pansies* that, reclining from the bank,
View through the immaculate pellucid stream
Their portraiture in the inverted heaven,
Might as well change their triple boast, the white,
The purple and the gold, that far outvie
The Eastern monarch's garb, e'en with the dock,
E'en with the baneful hemlock's irksome green.”

It has been recommended either in the form of an extract, or boiled in milk, for the cure of epilepsy, asthma, and in various cutaneous diseases ; and stated by some authors to have been used with success when all other remedies have failed, especially in that kind of diseased skin called *crusta lactea*, but in the hands of modern practitioners it has failed : formerly too, its decoction was thought to possess the property of removing from the eye specks and scars, caused by ulcerations, and also to be an excellent remedy for coughs, and a good diuretic. How it obtained the name of Heart's-ease I know not. Herrick says—

“ Frolic virgins once there were,
Over loving living here ;
Being here their ends deny'd,
Ran for sweethearts mad and died.

Love in pitie for their tears,
And their loss in blooming years,
For their restlesse here spent houres,
Gave them Heart's-ease turned to floures.”

These are not, however, the only virtues that they are said to possess ; for the poets say—

“ Are not Pansies emblems meet for thought ?
The pure, the chequer'd—gay and deep by turns ;
A line for every mood the bright things wear
In their soft velvet coats.”

6. *V. lu'tea*, *Huds.* (Fig. 392.) *yellow Mountain Violet*, or *yellow Pansy*. Stem ascending, much branched at the base ; leaves crenated,



387

Viola canina.



388

Viola canina, var. minor.



389

Viola tricolor.



390

Viola tricolor, var. arvensis



391

Viola tricolor, var. saxatilis



392

Viola lutea

the lower ovate, the upper oblong; stipules lyrate, pinnatifid, much divided.

English Botany, t. 721.—English Flora, vol. i. p. 307.—Hooker, British Flora, vol. i. p. 122.—Lindley, Synopsis, p. 36. *V. grandiflora*, Hudson, not Linn.

α. grandiflora. Flowers large, the plant small. *V. grandiflora*, Vill. Cat.

β. sudetica. Flowers large, petals often deeply crenated. *V. sudetica*, Willd.

γ. majus. Leaves broadly ovate, subcoriaceous, flowers deep yellow.

Root small, fibrous. Stem from three to six inches high, much branched and curved at the base, sometimes simple, weak and slender, angular, hairy or smooth. Leaves numerous, alternate, on flat footstalks, slightly crenated, and more or less hairy, with a mid-rib and slender lateral veins, the lower ones ovate, somewhat heart-shaped at the base, the upper ovate oblong. Stipules large, lyrate, with numerous narrow linear segments, the terminal one lanceolate, ovate, simple, or crenated. Flowers large, solitary, on a long slender angular footstalk, quite smooth, and near the top is a pair of lanceolate, simple, or more generally toothed at the base bracteas, sometimes they are oblong, obtuse. Calyx of five lanceolate mostly acute segments, having at its base from the point of insertion an obtuse simple or notched prolongation, smooth, or sometimes slightly hairy, and the margins are often membranous, and each segment has three longitudinal ribs. Corolla large or small, but always longer than the calyx, and is of variable colours, sometimes entire, deep purple or yellow, or these colours more or less blended together, or the two upper petals are purple, and the others yellow, or the four upper ones purple, and the lower yellow, the lower one and almost always the two lateral ones marked with dark simple or slightly branched lines, spur obtuse, scarcely extending beyond the calyx, the lateral petals with a tuft of hairs at their base. Stamens and pistil similar to the last, as well as the capsule and seeds.

Habitat.—Frequent in mountain pastures in the North of England, Wales, and Scotland; and mountains near Castletown, County of Cork, Ireland.

Perennial; flowering during the Summer months.

The variety *γ. majus*, Sir W. J. Hooker observes, is a very singular one, discovered by Mr. Murry, in Arran, and cultivated for many years in the Glasgow Botanical Garden. It forms a large dense tuft, and with its very numerous broad dark green leaves and bright yellow flowers, makes a handsome appearance.

GENUS XXXIX. RIBES.—LINN. *Currant and Gooseberry.*

Nat. Ord. GROSSULARIÆ. DE CAND.

GEN. CHAR. *Calyx* of four or five segments, regular, and bearing the *petals* and *stamens*. *Style* from two to four-cleft. *Fruit* a single celled, many seeded berry.—Name: "Ribes was a word applied by the Arabic physicians to a species of *Rhubarb*, *Rheum Ribes*. Our older Botanists believed that it was our Gooseberry; and hence Bauhin called that plant *Ribes acidum*."—Hooker.

* *Without Thorns. Flowers racemose. Currants.*

1. *R. rubrum*, Linn. (Fig. 393.) *common red Currant*. Racemes smooth, pendulous both in flower and fruit; calyx cup-shaped, almost flat; petals small, spatulate, or notched.

English Botany, t. 1289.—English Flora, vol. i. p. 331.—Hooker, British Flora, vol. i. p. 122.—Lindley, Synopsis, p. 106.

A bushy erect *shrub*, with a smooth cuticle that cracks and curls up as the plant increases. *Leaves* alternate, on longish smooth or fringed footstalks, five lobed, and doubly serrated, paler beneath, and with prominent ribs and veins, smooth, or slightly hairy, especially beneath. *Inflorescence* racemes of numerous flowers, pendent from the axis of the leaves. *Flowers* small, pale green, each on a short partial footstalk, arising from the axis of a small ovate *bractea*, which soon falls away, and frequently beneath the flower there are one or two small ones. *Calyx* somewhat cup-shaped, but almost flat, the limb of five acute segments. *Petals* small, alternating with the segments of the calyx, and fixed into its tube, spatulate, obtuse, or slightly notched. *Stamens* on short *filaments*, opposite the segments of the calyx. *Anthers* of two separate lobes, two celled, bursting longitudinally. *Style* short. *Stigmas* two, spreading. *Berry* globular, smooth, red, and shining, crowned by the withered persistent flower, of one cell. *Seeds* numerous, attached by one end to the parietal placenta by a slender cord, and suspended amongst the pulp; the external integument of the seed is gelatinous, the internal membranous. *Embryo* minute.

Habitat.—Alpine woods in the North of England and Scotland; and not unfrequent in hedges in various parts of the country, and Ireland, but not wild in such situations.

Shrub; flowering in May.

The red currant is a well known cultivated garden shrub, producing red, pink, and white berries, the two latter being only varieties of the former, and are esteemed more as a dessert fruit than as applied to so many domestic purposes as the red currants, which contain more abun-

dantly the grateful acidity than the others. They are boiled with nearly an equal weight of sugar, and make an excellent preserve useful for a variety of culinary purposes; and the juice, boiled with an equal weight of lump sugar into a jelly, is esteemed as a delicious addition to the sauce of roast hare, venison, and a long kept leg of mutton, and also for various kinds of confectionery. The agreeableness of the red currant depends upon its peculiar *aroma* in combination with malic acid and saccharine matter, and it imparts these qualities to wine made from its fermented juice, with the addition of a quantity of water and sugar; a wine which is superior, in the opinion of many persons, to several grape wines, which are procured at great expense, a circumstance that tends in no inconsiderable number of cases to the increase of their estimation. When the fruit is fresh it is cooling, and mostly very agreeable to the palate of those suffering from fever, and a small quantity of its jelly added to boiling water, and allowed to cool, is a useful drink agreeable for a time to many persons in a feverish state; and is said to lessen an increased secretion of bile, and act as a laxative upon the bowels, but in some cases it occasions considerable flatulency and uneasiness.

The currant, like the gooseberry, is a plant flourishing only in a cool climate, and seems there to supply the place of the grape in warmer countries, requiring a longer time for the perfection of its fruit than seems allowed it when planted in a warmer climate. We have repeatedly seen the attempt made to grow them in the South of Italy and Portugal; but the plants become tall and straggling, quite losing the compact character of the bush in its native country, and the fruit is small, bitterish, and far from being pleasant, and very little is produced: so that the Englishman far from his native land, who still retains in memory the delights of this fruit, and the grateful taste of his mother's preserve, must procure them in perfection from his parent land.

"On foreign mountains may the sun refine
The grape's soft juice, and mellow it to wine,
With citron groves adorn a distant soil,
And the fat olive swell with floods of oil:
We envy not the warmer clime, that lies
In ten degrees of more indulgent skies,
Nor at the coarseness of our heaven repine
Though o'er our heads the frozen Pleiads shine."

Addison.

2. *R. petraeum*, Wulf. (Fig. 394.) *Rock Currant*. Racemes with glandular hairs, erect in flower, pendulous in fruit; calyx smooth, cup-shaped; its segments beneath bluntish, flat; petals small, spatulate; leaves pale and dull.

English Botany, t. 705.—English Flora, vol. i. p. 332.—Hooker, British Flora, vol. i. p. 122.—Lindley, Synopsis, p. 106.

A low much branched *shrub*, with a smooth cuticle cracking and curling up, as in the last species. *Leaves* alternate, on channeled hairy footstalks, three or five lobed, smooth, or somewhat scattered over with hairs, a pale glaucous green beneath, with three or five mid-ribs and numerous small lateral veins, the margins doubly serrated. *Inflorescence* erect axillary racemes, which are recurved and pendant when in fruit, the stalks more or less scattered over with short glandular hairs, partial stalks short, arising from a small ovate membranous edged *bractea*, which soon falls away, and frequently there are one or two small scales beneath the flowers. *Calyx* cup-shaped, with five spreading flat obtuse or acute segments, smooth, or sometimes with a slightly ciliated margin, green, or with a pinkish tinge. *Corolla* of five small spatulate segments fixed into the tube of the calyx between the segments. *Stamens* five, alternating with the petals on short *filaments*. The *anthers* of two oblong cells, bursting longitudinally. *Style* short. *Stigma* of two spreading lobes. *Berry* small, smooth, with several obscure ribs, globose, bright red, acid, crowned by the persistent withered flower. *Seeds* numerous, similar to the above species.

Habitat.—Woods in the North of England and Scotland; rare. Eggeston, and near Conscliffe, Durham; Scots Wood Dean, Northumberland; near Airy Castle, and by the Spey side, at Aviemore, Scotland.

Shrub; flowering in May and June.

3. *R. spica'tum*, Robson. (Fig. 395.) *acid Mountain Currant*. "Spikes upright in flower and in fruit; flowers nearly sessile; petals oblong; bracteas shorter than the flowers."

English Botany, t. 1290.—English Flora, vol. i. p. 332.—Hooker, British Flora, vol. i. p. 122.—Lindley, Synopsis, p. 106.

"This has the habit of the two foregoing species, but differs from both in the extreme shortness of the partial *flower stalks*, rendering the inflorescence a *spike* rather than a *cluster*, which, moreover, is erect both in flower and fruit. If these characters be not constant, the present species probably belongs to *R. petraeum*, which seems scarcely credible."

Habitat.—Woods near Richmond, Yorkshire; and formerly near Gainsford, Durham.—*Mr. G. Robson*.

Shrub; flowering in May.

This plant we are not acquainted with, except from the works above quoted; the description and remarks are from Smith.

4. *R. alpi'num*, Linn. (Fig. 396.) *tasteless Mountain Currant*. Racemes with glandular hairs, erect both in flower and fruit; flowers plain, smooth, shorter than the lanceolate bractea; leaves beneath pale and shining.



393

Ribes rubrum.



394

Ribes petraeum.



395

Ribes spicatum.



396

Ribes alpinum.



397

Ribes nigrum.



398

Ribes grossularia.

English Botany, t. 704.—English Flora, vol. i. p. 333.—Hooker, British Flora, vol. i. p. 121.—Lindley, Synopsis, p. 106.

A small branched *shrub*, from two to three feet high, with a pale smooth shining loose cuticle cracking and curling up, much branched and leafy. *Leaves* alternate, scattered over with hairs, on channelled hairy footstalks, of three or five lobes, green above, pale and shining beneath, with three or five ribs and a few slender lateral veins, the margins ciliated, coarsely and doubly serrated. *Inflorescence* axillary. *Racemes* erect both in flower and in fruit, more or less profusely scattered over with short hairs, terminating in a rather large round dark gland, some of the racemes large, with numerous flowers bearing stamens only in a perfect state, others with a few flowers that are perfect, partial *footstalks*, short from the axis, of a lanceolate membranous *bractea*, longer than the flower, having a mid-rib, and the margin fringed with glandular hairs. *Calyx* plain, of five broad obtuse or acute segments, three ribbed *petals* very short, obtuse, fixed into the tube of the calyx between the segments of the calyx. *Stamens* with short *filaments*, and two oblong *anthers*. *Style* short, with an obtuse notched *stigma*. *Berry* small, red, globose, smooth, crowned by the withered flower, having an insipid taste.

Habitat.—Woods and fissures of shady rocks; in the North of England and Scotland; about Bradford and Ripon, Yorkshire; Buxton, Derbyshire; Cadzow Castle, near Hamilton, and Bothwell Castle, Scotland.

Shrub; flowering in May.

This is readily distinguished by its shining leaves and long lanceolate bracteas. Upon the cuticle of this, as may also be observed upon other species of *Ribes*, are minute black spots, which, upon examination with a strong lens, will be found to be a kind of Fungus, the *Dothidea ribesia*, Pers.

5. *R. ni'grum*, Linn. (Fig. 397.) *black Currant*. *Racemes* downy, pendulous, of few flowers, with a separate one at the base; flowers bell-shaped; calyx scattered over with glands; the segments obtuse, recurved; leaves dotted with glands on the under side.

English Botany, t. 1291.—English Flora, vol. i. p. 333.—Hooker, British Flora, vol. i. p. 123.—Lindley, Synopsis, p. 107.

A *shrub* about three feet high, more spreading, and less branched than *R. rubrum*. *Leaves* alternate, large, on channelled footstalks, three or five lobed, coarsely and sometimes doubly serrated, smooth above, paler beneath, and scattered over with glandular dots, which exhale a peculiar odour, the ribs and veins strong and prominent beneath. *Inflorescence* a pendulous *raceme*, of few green flowers, having an odd one at the base, the stalk downy, the partial footstalks long, from the axis of a small lanceolate *bractea*. *Calyx* bell-shaped, the

segments oblong, recurved, scattered over with glandular hairs. *Petals* oblong, acute, fixed into the tube, and alternating with the segments of the calyx. *Stamens* on slender *filaments*, bearing roundish oblong *anthers*. *Style* short. *Stigma* obtuse, notched. *Berry* large, black, globose, crowned by the withered flower, of a pleasant sub-acid taste, with somewhat of the flavour of the leaves.

Habitat.—Damp woods, and the banks of rivers in various parts of the country; not unfrequent.

Shrub; flowering in May.

The fruit of the black currant is esteemed by many persons much more than the red; but to others its peculiar fragrance is very objectionable. Made into jelly or jam, with sugar, the fruit is highly approved of as a remedy for the relief of sore throats and ulcerated mouths, either taken alone, made into lozenges, or boiling water poured upon it, and drinking the infusion. This, as well as an infusion made of the leaves, is said to act powerfully as a diuretic; and a good draught of it taken hot before getting into bed promotes perspiration; and the wine made from the fermented juice of the berries is thought to have the same medicinal properties. In Siberia the leaves are dried and mixed with souchong, to give it the flavour of green tea; and infused in spirits they give it a colour resembling common brandy. The young wood seems also to possess the same properties as the leaves.

* *With Thorns*. *Flowers pedunculated one to three*. Gooseberries.

1. *R. Grossula'ria*, Linn. (Fig 398.) common Gooseberry. Peduncles from one to three flowered, hairy, each flower-stalk bearing one, two, or three bracteas; fruit more or less hairy; calyx campanulate; its segments reflexed.

English Botany, t. 1292.—English Flora, vol. i. p. 334.—Hooker, British Flora, vol. i. p. 123.—Lindley, Synopsis, p. 107.

β pubescens. Ovarium hairy, becoming smooth as the fruit advances to maturity. *R. Uva crispa*, Linn. English Botany, t. 2057.

γ. glabrum. Smooth, except the margins of the leaves, petioles, bractea, and calyx, being ciliated. *R. reclinatum*, Linn.

A low much branched bush, with a smooth pale cuticle cracking and rolling off, armed with sharp thorns, one, two, or three together immediately beneath the buds, which put out a fascicle of leaves and the flowers. *Leaves* numerous, on footstalks, channeled above, either smooth or hairy, three or five lobed, cut and serrated, paler beneath, with strong ribs and branched veins, generally hairy on both sides, but sometimes quite smooth and shining above, while beneath it is thickly clothed with soft hairs. *Flowers* solitary, or on a branched peduncle of two or three flowers from the axis of the leaves, smooth or hairy, as are the minute *bracteas* beneath them. *Calyx* bell-shaped,

surmounting the ovarium, which is smooth or hairy, having also sometimes a number of beautiful pink glandular hairs interspersed amongst them, the *limb* of the calyx of five oblong obtuse reflexed veiny segments. *Petals* alternating with the segments of the calyx, and fixed into the mouth of the tube, oblong, obtuse, smooth or hairy. *Stamens* alternating with the petals, on smooth or hairy slender *filaments*. *Anthers* two, oblong, bursting longitudinally. *Style* nearly as long as the stamens, simple or hairy. *Stigma* obtuse, notched, or entire. *Berry* roundish, oblong, smooth or hairy, red, green, or yellow, and very variable in size.

Habitat.—Woods, hedges, and thickets; not unfrequent. Thought by some persons not to be an indigenous plant, but naturalized. In the North of England, however, as well as Hamilton woods in Scotland, it has the appearance of being wild.

Shrub; flowering in April and May.

The fruit of the Gooseberry is so well known as a favourite dessert, and applied to so many domestic purposes, as not to need specifying here. The wine made from its green fruit forms an excellent and very favourite beverage, and the making it of a superior quality and flavour is a triumph of considerable importance in the annals of the domestic management of our country dames, and when well made and managed it is little inferior to champagne; in fact, it is frequently sold in the shops under that name at a most extravagant charge, and is a fraud upon the pockets of the ignorant, whose palate, untutored in such luxuries, is unable to detect the cheat.

There are a considerable number of varieties of gooseberries both as to size, colour, and acidity; the size depending mainly upon the mode of cultivation. In some parts of the country, especially in Lancashire, Nottinghamshire, and other neighbouring counties, this is a very favourite fruit with amateur gardeners, and the success of the cultivation is judged of not by the quantity produced by any plant, but the magnitude of the fruit, and these sometimes are grown to a size weighing an ounce and a half or more. To produce these, however, the tree is sometimes not allowed to bear more than one or two berries, and requires the greatest care in pruning, keeping cool and dry the fruit, &c. &c. The acidity of the fruit seems in some way connected with the colour, for those of the darkest colour contain the greatest proportion of acid, which is the malic in combination when the fruit is ripe with sugar, and it is from this that the various kinds of berries are better suited to different purposes, as preserving, kitchen use, wine, &c.

The gooseberry is, like the currant, found wild in the mountainous districts of the continent; but it is seldom cultivated in the gardens, from its not producing either much or good flavoured fruit. In

Portugal gooseberries are called *Uva de Nord*, (grapes of the North); in Italy *Uva spinosa*, (spiny grapes); and in French *groseilles*.

GENUS XL. HE'DERA.—LINN. *Ivy*.

Nat. Ord. ARALIA'CEÆ. JUSS.

GEN. CHAR. *Calyx* of five teeth. *Petals* broadest at the base. *Style* simple, or divided. *Fruit* a succulent *berry*, crowned by the calyx, of from three to five cells, and as many *seeds*.—Name said to be from *hæreo*, to *stick*, because it attaches itself to trees and old walls.

1. *H. He'lix*, Linn. (Fig. 399.) *common Ivy*. Stem climbing; flowers in erect umbels; leaves coriaceous, smooth and shining, ovate or heart-shaped, or of from three to five angular lobes.

English Botany, t. 1267.—English Flora, vol. i. p. 335.—Hooker, British Flora, vol. i. p. 123.—Lindley, Synopsis, p. 133.

Stem very long and creeping, and attaching itself to objects that are near it, as walls or trees, by means of numerous root-like processes, branched, and very leafy. *Leaves* evergreen, of dark hue, smooth and shining, paler beneath, with a mid-rib and long lateral veins, alternate on footstalks of variable shapes, sometimes the whole are ovate-lanceolate, with a more or less waved border, in others the upper leaves are only of this shape, while the lower are of three or five angular lobes, and in other instances the whole are of this shape. *Inflorescence* a simple umbel, of numerous flowers, terminating the branches either with one or a number of umbels, disposed in a corymbose manner. *Flowers* small, green, on stalks, clothed with close minute star-like down, surrounded at the base with several small ovate-lanceolate *bracteas*, limb of the *calyx* of five minute teeth. *Petals* green, reflexed, oblong from a broad base, pointed, with a mid-rib. *Stamens* alternating with the petals. *Filaments* as long as the petals. *Anthers* of two longitudinal cells, cloven at the base. *Style* simple and furrowed, or several. *Stigma* simple, obtuse. *Fruit* a smooth globular *berry*, black, somewhat glaucous, of from three to five cells, surrounded by a mealy substance. *Seeds* single in each cell, oblong.

Habitat.—Hedges, woods, rocks, and ruined buildings; frequent.

Shrub; flowering in October.

Ivy by the ancients was much esteemed. Of it they wove the fillets of their Bacchanalian merry makings, and wreathed into a crown they placed it on the brows, to mark the poet's fame; not only, how-



399

Hedera helix.



400

Glaux maritima.



401

Illecebrum verticillatum.



402

Thesium linophyllum.



403

Gentiana acaulis.



404

Gentiana pneumonanthe.

ever, did they use it as an external decoration, but its juice, they say, dissipated the effects of too great potations of their generous wine. We do not, however, find that it has this property. The leaves have little or no smell, but a very nauseous taste, possessing stimulating properties, with a somewhat purgative effect; they were formerly applied to ulcers, and are at the present time, by the country people, as well as it was formerly used to increase the discharge of issues. The berries are bitter, purgative, and also emetic; they are not now used, but are the favourite food of some kinds of birds during the winter season.

Ivy is now chiefly valued as an ornamental evergreen, of which there are numerous varieties; some with variegated leaves, others with very large green lobed ones: and no plant is more useful than it is for covering old walls, mouldering ruins, or rugged rock work, since it will flourish well in the poorest soil, in shady situations, or twisting its pliant arms around the withered limbs of the patriarchal oak, holds fast its mouldering fragments, with seeming filial solicitude, and rejoices in making gay with its ever-shining leaves the tottering head of the grey grown monarch of the forest; and o'ten, too, do we see it mounting over the shattered ruins of battlements and towers, clinging to and holding in its grasp the very fragments. Byron in his *Childe Harold*, speaking of the tomb of Cecilia Metella, says,

“ There is a stern round tower of other days,
 Firm as a fortress, with its fence of stone,
 Such as an army's baffled strength delays,
 Standing with half its battlements alone,
 And with two thousand years of ivy grown,
 The garland of eternity, where wave
 The green leaves over all by time o'erthrown :—
 What was this tower of strength? within its cave,
 What treasures lay so lock'd, so hid? —A woman's grave.”

From the stem of the ivy there exudes a juice of a resinous character, called *Gummi hederæ*. It may be obtained in small quantities in this country, but is imported from warmer climates, particularly the East Indies. It is brought over in hard compact masses, of a brownish colour, reddish outside, paler within; it has an agreeable smell, and astringent taste. It is seldom or never used in the practice of the present day; it possesses astringent and slight anti-spasmodic virtues.

The root-like processes, which are abundantly sent out from the stems, and by which the plant clings to objects, and supports its long slender branches, is one of the many instances of the admirable manner in which this is accomplished in climbing plants; and the observer of nature will find that even in these appendages to plants, there is much that is curious in their structure. They are very variously formed, but all equally perfect in accomplishing the purpose for which they were

made, namely, the support of the climbing branches, but not as means of absorbing sustenance for the maintenance of its vitality.

GENUS XLI. GLA'UX.—LINN. *Sea Milkwort.*

Nat. Ord. PRIMULA'CEÆ. VENT.

GEN. CHAR. *Perianth* single, inferior bell-shaped, five-cleft, coloured. *Stamens* inserted at the bottom of the perianth. *Stigma* capitate. *Capsule* globose, of one cell and five valves. *Seeds* about five, attached to a central placenta.—Name from γλαυκιον, on account of its sea green colour, or because it grows near the sea.

1. *G. mari'tima*, Linn. (Fig. 400.) common *Sea Milkwort*, or *Black Saltwort*.

English Botany, t. 13.—English Flora, vol. i. p. 337.—Hooker, British Flora, vol. i. p. 124.—Lindley, Synopsis, p. 183.

Root with long branched fibres. *Stem* bent at the base, or nearly erect, and sending out roots from the lower joints, from two to five inches high, branched, especially below, round, smooth, and very leafy. *Leaves* in alternate pairs, ovate or ovate oblong, quite smooth, entire, fleshy, of a glaucous green, paler beneath, with a mid-rib, saltish to the taste. *Flowers* numerous, solitary, nearly sessile in the axis of the leaves, of a pinkish colour, the *perianth* single, bell-shaped, deeply cleft into five obtuse segments. *Stamens* inserted into the bottom of the perianth. *Filaments* awl-shaped, and as long as the perianth. *Anthers* oblong, of two longitudinal cells. *Style* as long as the stamens, tapering upwards with a capitate *stigma*. *Capsule* globose, pointed with the base of the style, of one cell, bursting with five valves. *Seeds* mostly five, roundish, attached to a central globose placenta. Embryo central, straight.

Habitat.—Sea shore, and muddy marshes near the sea; frequent.

Perennial; flowering in June and July.

GENUS XLII. ILLE'CEBRUM.—LINN. *Knotgrass.*

Nat. Ord. PARONYCHI'Æ. ST. HIL.

GEN. CHAR. *Calyx* in five nearly separate segments, thickened and laterally compressed, cartilaginous, terminating in a slender awl-shaped point. *Petals* wanting, or reduced to five alternate awl-shaped scales. *Style* short. *Stigmas* two, obtuse. *Capsule*

surrounded by the calyx, of one cell, marked with five longitudinal stria. *Seed* single, attached to the side of the cavity.—Name *illecebra*, an *enticement*, or *attraction*, anciently given to a showy tribe of plants.

1. *I. verticillatum*, Linn. (Fig. 401.) *whirled Knotgrass*. Stem procumbent, thread-like; leaves broadly ovate; flowers in crowded axillary whorls.

English Botany, t. 895.—English Flora, vol. i. p. 336.—Hooker, British Flora, vol. i. p. 124.—Lindley, Synopsis, p. 61.

Root small, fibrous, with creeping stems, putting out roots from the joints. The whole plant quite smooth. *Stems* slender, thread-like, much branched, or simple, spreading upon the surface of the ground, green, or of a pinkish colour, round, or somewhat angular at the whorls. *Leaves* numerous, in alternate pairs, roundish, oblong, or spatulate, sessile, or on short footstalks, somewhat fleshy, having at their base thin pale membranous lacinated *stipules*. *Flowers* numerous, crowded in axillary whorls, small, white, or pinkish. *Calyx* of five white segments, scarcely united at the base, oblong, fleshy, pointed, and terminating in a curved slender awl-shaped bristle, compressed on the sides, hollowed out in the inside into a kind of hood, where it is of a green colour. *Petals* either wanting or reduced into thin awl-shaped pinkish scales, alternating with the segments of the calyx. *Stamens* opposite the segments of the calyx, and inserted into their base. *Anthers* ovate, of two cells. *Style* very short. *Stigmas* two, obtuse. *Capsule* surrounded by the persistent calyx, oblong, pointed, marked with five longitudinal lines, along which it separates. *Seed* solitary, ovate, pointed, attached to one side of the capsule.

Habitat.—Damp marshy places in Devonshire and Cornwall; not uncommon.

Perennial; flowering in July.

A small interesting plant, from the singular construction of its flowers; and though not obtruded upon the notice from any gay charms that it has, the Botanist will find, on its examination, much that is worthy of notice, especially in the calyx, and its curious formation hollowed out in its inside, forming a cavity, which is closed around, and protecting the important parts of fructification from intrusion or injury by external causes; and at the same time their fleshy substance supplies those parts with nutriment, and form reservoirs in case of need, a circumstance not unlikely to occur during the Summer months, from the moisture of the situation in which the plant grows becoming dried up. These, it will appear, are thus formed, and supply the want of a glandular disk, which we see in many other plants; and thus we observe in this unobtrusive plant another instance of admirable and beautiful arrangement of its parts, adapted to the circumstances and situation of its growth, and that all things are made, though so

very variable, for some useful end; and that every weed, however insignificant in its appearance, will point out the perfection given to his works by the all-wise Author of creation.

GENUS XLIII. THE'SIUM.—LINN. *Bastard Toadflax.*

Nat. Ord. SANTALACEÆ. R. BROWN.

GEN. CHAR. *Perianth* four or five-cleft. *Petals* wanting. *Stamens* opposite the segments of the calyx, surrounded with a small fascicle of hairs. *Style* long. *Stigma* simple, obtuse. *Fruit* a single seeded dry or fleshy drupe, crowned by the persistent calyx.—Name of doubtful origin.

1. *T. linophyllum*, Linn. (Fig. 402.) *Lint-leaved Bastard Toadflax.* Stem and branches paniculated; leaves linear, lanceolate, three nerved; bractæas ternate; fruit nearly globose.

English Botany, t. 247.—English Flora, vol. i. p. 338.—Hooker, British Flora, vol. i. p. 124.—Lindley, Synopsis, p. 208.—*T. pratense*, Ehrh.

Root woody, yellow, branched, bearing several stems. *Stem* erect, or spreading, smooth, striated, or angular, branched and leafy, from twelve to eighteen inches high. *Leaves* numerous, alternate, linear, lanceolate, obtusely pointed, three ribbed, the margins smooth, or roughish towards the point, about an inch long, of a pale green colour. *Inflorescence* terminal, paniculated, racemes of numerous *flowers*, mostly turned to one side, erect, spreading when in fruit, each partial footstalk having at its base a *bractea* of three irregular sized leaves, one mostly much larger than the two others, obscurely, three ribbed. *Flowers* pale, yellowish, or white, the *perianth* with a short tube, the *segments* four or five oblong obtuse or acute ones, margins entire, or irregularly toothed. *Stamens* inserted into the base of each segment, surrounded with a few short hairs. *Style* simple, as long as the *perianth*. *Stigma* obtuse, capitate. *Fruit* somewhat globose, strongly ribbed, a single seeded *drupe*, crowned by the persistent *perianth*. *Seed* roundish.

Habitat.—Elevated chalky pastures; not unfrequent in Cambridge-shire, Norfolk, Suffolk, and Dorsetshire; Ramar Hills, near Dorking, Surrey.—J. S. Mill, Esq.

Perennial; flowering in July.

ORDER II.

DIGYN'IA. 2 PISTILS.

GENUS XLIV.† GENTIA'NA.—LINN. *Gentian*.

Nat. Ord. GENTIAN'EÆ. JUSS.

GEN. CHAR. *Calyx* four or five-cleft. *Corolla* funnel or salver-shaped, with a tubular base, the limb five-cleft. *Stamens* inserted into the tube of the corolla. *Styles* sometimes united into one. *Stigmas* two. *Capsule* of one cell, with two valves, and marginal placenta.—Named from *Gentius*, King of Illyria, who is said to have brought it into use as a medicine.

* *Flowers terminal or axillary, solitary, or in pairs, the mouth naked.*

1. *G. acaulis*, Linn. (Fig. 403.) *dwarf Gentian*. Flower solitary, terminal, about as long as the square stem; leaves oblong lanceolate; stigmas semi-orbicular toothed.

English Botany, t. 1594.—English Flora, vol. ii. p. 28.—Hooker, British Flora, vol. i. p. 124.—Lindley, Synopsis, p. 178.

Root fleshy, branched fibres. *Stem* solitary, square, smooth, from one to two inches long, arising from the middle of a tuft of radical leaves, and one or two pairs on the stem. *Leaves* oblong lanceolate, acutely pointed, from one to five ribbed, quite smooth, shining. *Flower* terminating the stem, and about the same length. *Calyx* mostly with a pair of leaves at the base, of one piece, tubular, divided into five broadly lanceolate acute segments, closely pressed to the tube of the corolla; each with a single and two lateral obscure ribs. *Corolla* bell-shaped, with a somewhat inflated tube, ribbed, of a pale blue, spotted within with dark purple spots, and quite naked, the limb plaited, of five broadly lanceolate acute spreading segments, of a very deep rich blue, entire, or occasionally notched at the base.

† *Suertia perennis*, Linn. (*Marsh Felwort*, or *Suertia*.) *Corolla* of five lanceolate acute segments; stem simple; peduncles corymbose; leaves nerved, ovate, pointed at each extremity.

English Botany, t. 1441.—English Flora, vol. i. p. 26.—Hooker, British Flora, vol. i. p. 124.—Lindley, Synopsis, p. 179.

According to Hudson, this plant was found by Dr. Richardson in Wales; but as it has not since been found there, and as there are some reasons to suppose there is a mistake as to its being a native plant, we think it ought not to be admitted into our Flora.

Stamens arising from about the middle of the tube, and about the same length. *Filaments* awl-shaped. *Anthers* of two long narrow cells, united round the style. *Styles* united, as long as the stamens. *Stigmas* semi-orbicular toothed.

Habitat.—Mountainous districts; near Haverfordwest, South Wales.—*M. de St. Amans*.

Perennial; flowering in June and July.

We have some doubt as to the claim this has to be admitted as a native plant, it having most probably escaped from the garden, where it is much cultivated for the beauty of its rich flowers, either in small beds or along the borders, and certainly few flowers surpass it in the richness and splendour of its colours. It is frequent on the mountain pastures of the Continent, and is sometimes used as a tonic, a principle possessed by all the plants of this order. Several varieties are mentioned of this plant, depending upon the length of the stem and the size and width of the leaves, as growing upon the Appenine mountains, in Italy.

2. *G. Pneumonanthe*, Linn. (Fig. 404.) *Marsh Gentian*. Flowers solitary, or numerous, terminal and axillary; stigmas linear, oblong; leaves linear.

English Botany, t. 20.—English Flora, vol. ii. p. 27.—Hooker, British Flora, vol. i. p. 125.—Lindley, Synopsis, p. 178.

Root of numerous long stout simple brown branches. *Stem* simple, solitary, or several from the same root, square, erect or bent at the base, smooth and leafy, from four to twelve inches high. *Leaves* opposite, linear, or linear lanceolate, obtuse or acute at the point, the margin fine serrated towards the point, smooth, paler beneath, single ribbed, sessile, and united at the base into a short tube round the stem. *Flowers* terminal and axillary, solitary, or mostly numerous, the axillary ones on short footstalks. *Calyx* tubular, membranous, with five broad ribs, terminating in linear lanceolate segments, with minutely serrated margins at the base of the calyx; there is mostly a pair of linear bractea, and sometimes several. *Corolla* somewhat bell-shaped or funnel-shaped, the tube yellow at the base, blue above, the limb plaited in five broadly lanceolate acute segments, of a rich deep blue, mostly notched between, and marked with five greenish streaks outside. *Stamens* arising from about the middle of the tube on awl-shaped filaments. *Anthers* of two linear cells, united around the style, beneath the linear oblong stigmas, which are minutely granulated. *Capsule* of one cell, surrounded by the withered flower, oblong, cylindrical, on a contracted footstalk, pointed at the extremity by the styles, which roll back, and separate the two valves at the apex for the escape of the seed, smooth, with two simple dorsal and the two lateral ribs, where the valves separate. *Seeds* very numerous, minute, ovate, attenuated, and beautifully marked with sunk dots, attached by their

pointed base to the placenta, formed by the incurved margin of the valves.

Habitat.—Moist heaths and damp places, in various parts of England.

Perennial; flowering from July to September.

This species is used in Russia for the same purposes that the *Gentiana lutea* is with us, and possesses similar tonic properties, useful in many debilitated states of the system, its infusion forming one of our most elegant bitters. Specimens are not unfrequently found with the leaves two or three times wider than in the normal state of the plant, and having a mid-rib and two lateral ones, a circumstance which has induced the belief in some persons of their being different species, and not a variety only.

**** Flowers terminal, solitary, with five large and five small segments, the mouth naked.**

3. *G. ver'na*, Linn. (Fig. 405.) *Spring Gentian*. Stem single flowered; calyx of five narrow winged angles; the larger segments of the corolla obtuse and crenated; style undivided; stigmas semi-orbicular; leaves ovate, crowded.

English Botany, t. 493.—English Flora, vol. ii. p. 29.—Hooker, British Flora, vol. i. p. 125.—Lindley, Synopsis, p. 178.

Roots slender, with creeping branches putting out fibrous roots and tufts of leaves, from amidst which arise the flowering stems. *Leaves* numerous, ovate, acute, sessile, the lower ones crowded in a rosette manner, those of the stem opposite, slightly sheathing at the base, each with a single rib, somewhat fleshy, quite smooth. *Stem* very short, square, bearing a solitary terminal flower. *Calyx* tubular, of five acute more or less broadly winged angles, each terminating in the mid-rib of five lanceolate segments, shorter than the tube of the corolla; at the base of the calyx are several small leaves or bracteas. *Flower* salver-shaped, the *tube* of the *corolla* cylindrical, yellowish above, green below, plaited and veiny, twice as long as the calyx, the *limb* of five ovate, obtuse, or acute spreading more or less crenated segments, and between these are five small deeply cloven ones, the limb is about half an inch across, of a dark brilliant blue, the mouth naked. *Stamens* on short *filaments* from the middle of the tube. *Anthers* oblong, of two cells, united around the upper part of the *style*, which is single. *Stigmas* of two semi-orbicular crenated lobes. *Capsule* oblong, of two valves. *Seeds* numerous.

Habitat.—Mountainous and alpine pastures; rare. Middleton in Teesdale, Durham, plentiful. Burrow Mountains, near Gort, and between Gort and Galway, Ireland.

Perennial; flowering in April.

This beautiful little flower is far more frequent in the alpine districts

of the Continent than with us. It is frequently cultivated as a border flower, but requires much more care than *G. acaulis*, and is a most beautiful addition to the collection of our early Spring flowers, blooming as when in its native fields, or along the mountain's side, while the white snowy mantle yet lingers on the ground.

4. *G. nivalis*, Linn. (Fig. 406) *small alpine Gentian*. Stem single flowered; calyx of five acute angles; the larger segments of the corolla acute, entire; style short, bifid; stigmas semi-orbicular; leaves small, ovate oblong, acute.

English Botany, t. 896.—English Flora, vol. ii. p. 29.—Hooker, British Flora, vol. i. p. 125.—Lindley, Synopsis, p. 178.

Root tapering, fibrous, simple. *Stem* erect, simple or branched, smooth, square, slender, from one to six inches high, leafy, the lower leaves surrounding the root, numerous, ovate oblong, the upper opposite, ovate, acute, united at the base, and forming a short sheath around the stem, smooth, shining, entire, single ribbed. *Flowers* terminating the stem and branches, solitary, about half an inch long. *Calyx* tubular, of five acute angles, terminating in the mid-rib of the lanceolate segments, nearly as long as the tube of the corolla, which is yellowish below, striated, plaited above, the mouth naked, the limb of five spreading oblong acute entire veiny lobes, having small cloven segments between them, all of a dark brilliant blue colour. *Stamens* on short slender filaments, from about the middle of the tube. *Anthers* small, ovate, scarcely united. *Styles* very short, spreading. *Stigmas* semi-orbicular, downy. *Capsule* oblong, of two valves, surrounded by the withered flower, as in the other species, bursting at the top. *Seeds* numerous, ovate, dark brown, closely pitted with small ovate pits.

Habitat.—Mountains, near the line of perpetual snow; exceedingly rare, and found only on the mountains of Scotland, Ben Lawers; and abundantly on rocks on both sides of Glen Isla, Clova.

Annual; flowering in August.

No plants exceed in the richness of their colours these minute gems of alpine districts, and none are more splendid than the flowers of this plant. It would seem that the more elevated a situation in which plants grow, the richer and deeper are the colour of their flowers, and these are mostly blue or purple, or white, and generally far surpass in the depth and richness of colour those species of the same genus growing in less elevated situations, as will be seen in the present; and as other familiar examples, we may mention those of *Myosotis* and *Veronica*.

*** *Flowers racemose or paniculated, four or five-cleft, the mouth fringed.*

5. *G. Amarel'la*, Linn. (Fig. 407.) *Autumnal Gentian*. Stem much



405

Gentiana verna.



406

Gentiana nivalis.



407

Gentiana amarella.



408

Gentiana campestris.



409

Cuscuta epithymum.



410

Cuscuta europaea.

branched, many flowered; calyx of five nearly equal linear lanceolate teeth; corolla five cleft, bearded.

English Botany, t. 236.—English Flora, vol. ii. p. 30.—Hooker, British Flora, vol. i. p. 125.—Lindley, Synopsis, p. 178.

Root tapering, twisted and branched below, yellowish. *Stem* square, erect, smooth, leafy, from four to twelve inches high, mostly purplish, very much branched, with short many flowered branches, forming a leafy *panicle*. *Leaves* lanceolate, or ovate-lanceolate, opposite, sessile dark green, paler beneath, three ribbed, and often five, the lower leaves frequently on short footstalks, broad at the base, the upper ones narrow, lanceolate, with an acute point. *Flowers* numerous, on short footstalks, bearing one or two lanceolate bractea, frequently the whole plant from the axis of the lower leaves upwards bears flowers. *Calyx* tubular, about half as long as the tube of the corolla, pale green, of five angles and ten ribs, the limb of five lanceolate nearly equal green segments, about as long as the tube. *Corolla* salver-shaped, the tube pale, striated, the limb pale dull purple, of five, sometimes four, or even three short broadly lanceolate segments, expanding in the sun, the mouth of the tube surrounded with waved hairs. *Stamens* inserted below the middle of the tube. The *filaments* slender, awl-shaped, longer than the tube of the corolla. *Anthers* oblong, of two nearly separate cells, bursting longitudinally. *Style* very short. *Stigmas* oblong, flat, spreading. *Capsule* long, cylindrical, pointed, opening at the apex, two valved, many seeded. *Seed* roundish, flat, dark brown, minutely dotted.

Habitat.—Pastures and meadows frequent, especially in a limestone district in a subalpine country.

Annual; flowering from April to July.

This and the following species are nearly allied to each other, but are readily distinguished by the calyx, that of *G. Amarella* being tubular, with a nearly regular limb of five narrow segments; while that of *G. campestris* is four-cleft, the two outer segments very large, enveloping the others. They are both possessed of the same bitter tonic principle, and are used indiscriminately by the country people as a stomachic, in combination with centaury, *Erythrœa centaurium*, making a tea of them, and taking one or two wine glasses of it during the day, and is often useful in debilitated state of the digestive organs.

6. *G. campestris*, Linn. (Fig. 408.) *Field Gentian*. Stem much branched, many flowered; calyx four-cleft; the two outer segments very large, ovate-lanceolate; corolla four-cleft, bearded.

English Botany, t. 237.—English Flora, vol. ii. p. 31.—Hooker, British Flora, vol. i. p. 125.—Lindley, Synopsis, p. 178.

Root tapering, twisted and branched below, yellowish. *Stem* square, erect, smooth, leafy, from four to twelve inches high, much branched, frequently from the base, somewhat corymbose above, green or pinkish.

Leaves in pairs, ovate-lanceolate, acute, three ribbed, smooth, dark green, paler beneath, the lower leaves ovate, or ovate-lanceolate, on short footstalks. *Flowers* very numerous, on rather long naked footstalks, thickened upwards. *Calyx* of four very unequal segments, with a short tube, the two outer ones very large, ovate-lanceolate, three ribbed, nearly as long as the tube of the corolla, enveloping the two smaller lanceolate ones, also three ribbed. *Corolla* salver-shaped, the tube cylindrical, striated, pale, yellowish, the limb of four, sometimes the terminal flower with five lanceolate segments, more or less bearded round the mouth, of a pale dull purplish colour. *Stamens* inserted about the middle of the tube, and about the same length, on awl-shaped *filaments*. *Anthers* oblong, of two longitudinal cells. *Style* short. *Stigmas* flat, spreading. *Capsule* linear, cylindrical, or slightly compressed, four ribbed, pointed, bursting at the apex, two valved, many seeded. *Seeds* very small, roundish, flat, brown, minutely dotted.

Habitat.—Fields, meadows, and elevated pastures, especially in a limestone district; frequent.

Annual; flowering from July to September.

GENUS XLV. CUSCUTA.—LINN. *Dodder*.

Nat. Ord. CONVOLVULACEÆ. JUSS.

GEN. CHAR. *Calyx* four or five-cleft. *Corolla* roundish, bell-shaped, the limb of four or five lobes, and sometimes with as many scales at the base below the stamens. *Capsule* two celled, two seeded, bursting at the base transversely. *Parasitical twining leafless plants, with long thread-like stems*.—Name the same as *καστορέα*, probably from the Arabic *Keshout*. (*Theis*).

1. *C. Epithymum*, Linn. (Fig. 409.) *lesser Dodder*. Stem very slender, branched; flowers sessile, in crowded heads; limb of the corolla in four or five ovate-lanceolate segments, about as long as the tube; stamens with a fringed converging scale at the base; stigmas filiform.

English Botany, t. 55.—(*C. Europæa*).—English Flora, vol. ii. p. 25.—Hooker, British Flora, vol. i. p. 127.—Lindley, Synopsis, p. 168.

Root small, fibrous, soon withering away. *Stem* thread-shaped, much branched, twisted, and entangled, of a dark red colour, sometimes pale yellow, attaching itself to the stem and branches of other plants by small ovate suckers, with a fringed margin. *Leaves* none. *Inflorescence* of from six to twelve sessile flowers, in a close roundish

head. *Flowers* small, white, or slightly tinged with pink. *Calyx* of one piece, persistent, deeply five-cleft in four or five lanceolate segments, somewhat fleshy at the base. *Corolla* bell-shaped, the limb of four or five ovate-lanceolate segments, about as long as the tube, the point more or less elongated. *Stamens* four or five, with awl-shaped *filaments* arising from the top of the tube between the segments of the limb, each having at its base an ovate scale, with a fringed margin closing over the germen. *Anther* small, yellow, ovate, cleft at the base. *Germen* roundish, superior, crowned by the two erect simple *styles*, with red *stigmas*. *Capsule* small, roundish, surrounded by the withered calyx and corolla, two celled, each cell single seeded, bursting transversely at the base. *Seed* small, roundish, flat, pale brown.

Habitat.—On furze, heath, broom, nettles, clover, thyme, &c. In various parts of England and Scotland.

Annual; flowering from July to August.

This is readily distinguished from the following, by its much more slender darker red stems, smaller clusters of flowers, the narrower segments of the calyx and corolla, and especially the fringed scale at the base of the stamens. We have found it on a great variety of plants, but more especially the heath, broom, and furze, in dry heathy situations, over which it spreads its slender arms, and seems indiscriminate in its selection of the species of plants which it converts to its use; for it may not unfrequently be found deriving support from five or six different plants at the same time, spreading over a surface of three or four feet, twisting and entangling in a confused looking manner. It is much more frequent on the Continent than with us, and especially in Portugal; We have seen it almost covering the herbage on the side of banks near the sea for a considerable distance.

2. *C. Europæa*, Linn. (Fig. 410.) *greater Dodder*. Stem slender, branched; flowers sessile, in crowded heads; limb of the corolla in four or five ovate acute segments, about as long as the tube, without scales at the base of the stamens; stigmas filiform.

English Botany, t. 378.—English Flora, p. 24.—Hooker in Flora Lond. t. 67.—British Flora, vol. i. p. 126.—Lindley, Synopsis, p. 168.

Root small, fibrous. *Stem* much stouter than the last, pale green, or pink, much branched and entangled, twisting itself about the other plant, three or four feet high, round and smooth, putting out indiscriminately at any part of the stem papillæ, round or ovate at the extremity, with a narrow fringed border around a central radical, by which it attaches itself to other plants, and derives its nourishment. *Leaves* none. *Inflorescence* round sessile heads, the size of a hazel nut, of numerous white flowers. *Calyx* of one piece, persistent, sessile, the base fleshy, having in the centre a green pedicle, which supports the germen and corolla, the limb of four or five ovate acute segments.

Corolla white, of one piece, the tube cylindrical, the limb of four or five ovate acute segments, as long as the tube. *Stamens* on slender *filaments*, with small ovate yellow *anthers*. *Germen* roundish, superior, crowned with the two short erect simple *styles* and pinkish *stigmas*. *Capsule* roundish, ovate, on a stalk about its own length, surrounded by the withered corolla and calyx, the stalk on which it stands is the pedicle, which was surrounded by the fleshy base of the calyx, which is absorbed after germination has taken place, during the perfection of the ovules. The capsule of two cells bursts transversely near the base for the escape of the four roundish *seeds*, which are minutely punctured, the *hilum* with a depressed opening, the *embryo* spiral, round, the central flesh albumen.

Habitat.—Parasitical on nettles, flax, hemp, hop, box, &c; rare. Chiefly in the Midland Counties of England; about Edinburgh, Aberdeen, the Isle of Arran, Scotland; and in Ireland.

Annual; flowering from July to September.

C. Epil'num, *Weihe*, *Flax Dodder*. Stem simple, heads of about five flowers; corolla with a fleshy globose tube, longer than the somewhat spreading campanulate calyx.

Reich. Ic. Bot. t. 500.—Hooker, British Flora, Ed. 4. vol. i. p. 109. *C. major*.—Koch. et. Tiz. cat. pl. palat. p. 5.

"Stem simple, yellowish green. *Flowers* fewer in a head, and much more succulent than in the preceding species, and cellular when seen under a lens. *Tube* of corolla always globose. *Filaments* very short. *Calyx* broad and spreading, with five broad acute teeth."

Habitat.—On flax, Ellesmere.—*J. E. Rowman, Esq.*

Annual; flowering in August and September.

"This," Sir W. J. Hooker observes, "I believe to be quite a distinct species;" and that "it is abundant in Germany, (whence it was probably introduced with flax seed to us), and is very injurious to the crops of this plant, upon which it is a parasite."

Of the two species of *Cuscuta* first above mentioned, the *greater Dodder* is easily distinguished from the *lesser*, by its more robust growth and larger size. It is on the Continent as with us far less common than the lesser Dodder, and like it seems indiscriminate in the plants from which it derives its support.

The Dadders, though less attractive in their appearance than many other of our native plants, are, nevertheless, perhaps amongst the most interesting to the student of nature, who delights to search out the wisdom, the ways, and perfection of all things made by the Father of the Universe.

The seeds of the Dodder, as we have already described, are contained in a two celled capsule, which bursts transversely near the base for the escape of the seeds: these falling to the ground remain in a dormant

state until the following Spring, when they put forth their slender stem and fibrous roots. The roots, however, are not able to supply the plant for any length of time with nutriment, and shortly die away; as does the stem also, if it is made to attach itself to some plant growing near it, around which it entwines its slender branches, and at various intervals puts out small wart-like protuberances, having a glandular apex, by which it attaches itself to other plants, at first adhering by the peculiar secretion from the gland, and shortly after this a minute fringed border is formed around it, and from the centre is protruded a slender radical, which pierces the bark and absorbs the fluids, circulating in the vessels of the plant upon which it attaches itself, and applies them to its own use—thus being able to support itself at the expense of the proper juice of another plant, its own root dies, and it becomes a true “parasite,” widely extending its branches, and deriving support from all the plants around, producing its numerous compact heads of crowded flowers, whose structure is equally curious as that of the stem. The calyx is large for the size of the flower, (more especially that of *C. Europæa*), but very fleshy in the apparent tubular part, which has a pedicle in the centre, supporting the corolla. After the stamens and pistils have performed their office, and the ovules are in need of a large and constant supply of nutriment, the fleshy base of the calyx, which appears to act as a reservoir in case of exigence, becomes, as they arrive at maturity, absorbed, leaving the capsule supported upon the central pedicle, and then it appears as though each flower was elevated upon its own footstalk, instead of sessile, as in reality it is. Thus we see a beautiful provision for the perfecting of the seeds to perpetuate the species, in a plant which derives its support through the medium of others, a supply of which is so apt to be checked or stopped from various contingent circumstances. The corolla is tubular in its lower part, and surrounds at its base the globular germen, over which is stretched a thin membrane from the sides of the corolla; and as the germen increases in size, this membrane is ruptured, forming scales at the base of the stamens, in a more or less regular manner. In our species, *C. Epithymum*, they form a constant and beautiful character; but in *C. Europæa* they are much smaller, lanceolate, of a very delicate texture, irregular in number, and shortly disappear. Their size, as well as number, is very variable, scarcely ever the same in two flowers on the same plant; and it is probable, from the circumstance of their extreme delicacy and variation in this species, that contradictory opinions are entertained as to their being ever found or not: for after the corolla expands, and the germen enlarges, we do not find scarcely a rudiment of them. The seeds are remarkable from their want of cotyledons and the embryo being spiral round the central albumen. It is also a curious fact, that the same plant extends its various ramifications over different plants, and ab-

sorbs their fluids impregnated with different qualities, and applies them to their own support; for we have remarked it attached to the box, hop, nettle, clover, and various grasses, at the same time; also on broom, heath, cistus, galiums, and sedums, the fluids of which are absorbed into one plant, and converted in the system of their cells and vessels into a nutriment, on which it flourishes and attains perfection!

NAT. ORD. UMBELLIFERÆ.

The natural order Umbelliferæ is an extensive and important group of herbaceous plants, for the most part, readily distinguished by the umbellate form of their inflorescence; but the student, to obtain a knowledge of their distribution into tribes and genera, and the distinguishing of the species, must be well acquainted with the different parts of the plant, especially the parts of the flower and fruit; and in the hope of rendering this more easy of attainment, the following remarks are made:—

The *roots* are variable, frequently fusiform, and often cultivated for culinary purposes, as the Carrot, (*Daucus Carota*); Parsnip, (*Pastinica Sativa*), &c.

The *stem* is round, angled or furrowed, simple or branched, hollow, or sometimes full of pith, but generally with a thin lining of pithy matter, divided at intervals with a partition of the same substance, forming a knot or joint where the branches and leaves are given off. The cortical or external part of the stem is furnished with receptacles of secretion, frequently abounding with aromatic juices, holding in solution gum or resinous matter, which on exposure to the air concretes into solid masses, and possesses various medicinal properties, as assafœtida, from the stem of the (*Ferula assafœtida*), &c.

The *leaves* are alternate, rarely opposite, sheathing at the base, which is sometimes very much dilated, as in *Angelica sylvestris*, compound, more or less divided, sometimes simple.

The *inflorescence* is an umbel, either simple or more generally compound. An umbel is formed when a number of pedicles proceed from the same point, and are of equal lengths; and if each pedicle bears a single flower, it is called a *simple umbel*, as in *Eringium*; but if these pedicles divide at the top and bear other umbels, it is called a *compound umbel*; and in this case the peduncles, which support the partial umbels, are called *radii*, and form the *umbella universalis*, or general *umbel*: while the secondary umbels, or umbellules, which they bear, are called *umbella partialis*, or *partial umbel*. The umbels are mostly furnished with *bractea*, in whorls around their base, and are called when they surround

the universal umbel *involucra*, or *involucra universalis*, or *general involucra*; and when they surround the partial umbels *involucella*, or *partial involucra*. Both of these may be present, or one or both of them absent.

The *flowers* are generally white, rarely pink, yellow, buff, or blue.

The *calyx* superior, attached to the germen, the limb of five lobes, entire, deciduous, or persistent, or truncated, or obsolete.

The *petals* five, equal or unequal, (rarely absent), inserted on the outer edge, of a fleshy nectariferous *disk*, alternating with the segments of the calyx, the claw (ungues) is narrow, and the limb either entire, notched, or with an inflexed point, in æstivation involute, imbricated, or rarely valvate, the outer petals of the flowers on the outer rays of the umbels sometimes the largest.

The *stamens* five, alternating with the petals. The *filaments* free, incurved in æstivation. *Anthers* of two cells, bursting by longitudinal clefts.

The *styles* two, simple, united at the base, where they are more or less thickened, forming the fleshy *disk* on the top of the germen, persistent spreading. *Stigmas* simple.

The *germen* inferior, formed of two adhering carpels, consequently two celled, each with a solitary pendulous ovula.

The *fruit* consists of two *carpels*, at length separating from the common axis, to which they adhere by their faces forming the *commisure*, each being crowned by its style, and they are suspended for a time from the extremity of the central filiform, mostly bifid, (at least at the top), *columella*. The *carpels* are of various shapes, covered externally by the lobes of the calyx, and variously marked with longitudinal elevated *ridges*, which are variable, being simply winged, filiform or obtuse, or crenated or waved, and in some nearly obliterated. Each carpel is marked with five, which are called *primary ridges*, from their being always present more or less distinctly, and alternating with these primary ridges are sometimes four others, which are called *secondary*. The channels between the ridges are called *vallecules*, and beneath them, covered by the coat of the pericarp, and sunk in the substance of the testa, are linear receptacles or bands, called *vittæ*; these *vittæ*, solitary, or several together, simple or elevate, contain an essential, oily, or resinous matter, in which resides their medicinal property, which is mostly aromatic and wholesome.

The *seed* is solitary, pendulous, usually adhering inseparably from the pericarp, rarely loose, as in *Criethmum* and *Archangelica*. The *albumen* is large, fleshy or horny, more or less, convex externally, but internally flat and smooth, as *Angelica*, *Daucus*, &c., or the sides rolled inwards, or deeply channeled in front, as *Torilis*, *Myrrhis*, &c., but rarely concave in front, as in *Coriandrum*. The

embryo is small, at the base of the albumen. *Cotyledons* oblong, somewhat unequal.

The distribution of this order which we have followed is nearly that of Dr. Koch, as given in his *Flora Germanicæ et Helveticæ*. He divides it into three sub-orders.

1. ORTHOSPERMÆ. Albumen in front, flat, or nearly so.
2. CAMPYLOSPERMÆ. Albumen with its sides curved inwards, forming a longitudinal furrow in front.
3. CODOSPERMÆ. Albumen hemispherical, concave in front.

The Tribes are founded upon the diversities of forms in the umbels, the presence or absence of the vittæ, and the number of ridges on the carpels. The genera upon the presence or absence of the calyx, the form of the petals and the position and outline of the ridges upon the carpels.

It will be seen by the details of this important order of plants how very much they differ in their properties, some being mild, and useful as articles of foods, affording an abundance of nutritive matter; others are agreeable, or powerfully aromatic, from the abundance of essential oil which they contain, being grateful stimulants and useful condiments, while others possess powerful medicinal properties, or are in a high degree poisonous; and those plants growing in watery places may in general be regarded with suspicion as possessing poisonous or deleterious properties; while those plants growing in a dry soil are for the most part esculent and aromatic; but although the stem and leaves may be poisonous, of some plants, the seeds do not in any case seem to possess the same property.

They are natives chiefly of the northern parts of the northern hemisphere; and according to the investigations of M. De Candolle, the proportions in which they are found in different parts of the world is as follows:—

In the Old World... ..	663	} or {	In the Northern Hemisphere. 679 In the Southern Ditto 205
In America	159		
In Australia	54		
In Scattered Islands.....	14		

SUBORDER 1. ORTHOSPERMÆ. *Albumen* in front, flat, or nearly so.

TRIBE 1. HYDROCOTYLÆÆ. *Fruit* with the sides very much flattened, the back convex or acute. *Albumen* flat in front. *Petals* spreading, entire, acute, with a straight or slightly inflexed point. *Umbels* simple, or imperfect.

GENUS XLVI. HYDROCOTYLE.—LINN. *Whiterot*.

GEN. CHAR. *Calyx* margin obsolete. *Petals* ovate, entire, acute, with a straight point. *Fruit* compressed at the sides, so as to form two flat nearly orbicular lobes. *Carpels* with five filiform ridges, those of the sides and back nearly obsolete, and the two intermediate ones arched. *Seeds* carinated, compressed.—Name from *υδωρ*, *water*; and *κοτυλη*, the *cotula*, or *cup*, from the shape of the leaves being depressed on the centre stalk, and somewhat resembling a cup.

1. *H. vul'garis*, Linn. (Fig. 411.) *common Whiterot, Marsh Pennywort*. Leaves peltate, orbicular, somewhat lobed and crenated; umbel of about five nearly sessile flowers.

English Botany, t. 751.—English Flora, vol. ii. p. 96.—Hooker, British Flora, vol. i. p. 126.—Lindley, Synopsis, p. 128.

Stem very long, filiform, creeping on the surface, and putting out from the joints numerous fibrous *roots*, and from the same point one, but mostly numerous leaves and flowering stems, quite smooth, succulent, pale green, or pinkish, simple or branched. *Leaves* on long slender simple upright footstalks, from two to three inches long, smooth, or scattered over with a few fine hairs, orbicular, shield-like, with the footstalk from the centre, from whence radiate around the branched veins more or less prominent on the under side, the margin more or less lobed and crenated, quite smooth, light green, horizontal. *Flower stalks* simple, slender, seldom more than an inch long, arising from the axis of the leaves, with a pair of small *bractea* at the base, bearing at its extremity one, sometimes two, one above the other small *umbels*, of about five flowers, on very short footstalks, with an *involucra* of four or five segments at the base. *Flowers* small. *Calyx* without limb. *Petals* broadly lanceolate, white, or frequently with a pinkish tinge, entire, spreading.

Habitat.—Bogs and low wet meadows; frequent.

Perennial; flowering in May and June.

Hydrocotyle, common water cup, marsh pennywort, whiterot, flowk-wort, or sheep killing pennygrass, is very common in wet marshy places, growing amongst the grass; and it has received its last name from the popular belief that it is the cause of that destructive disease of the liver in sheep, known by the name of rot. Why such an opinion should have become general we are at a loss to imagine, for if the promulgators of this idea had observed the sheep with greater attention, it would have been found that they will not eat this plant. It is true that in sheep kept in wet meadows where this plant grows, the disease is developed; but if the occupiers of these

lands would take warning, they would, especially in a warm moist season, take their sheep out of the meadows where the pennywort grows, and put them into dryer and more elevated pastures where it will not grow, it will then be found that no disease of this kind will appear amongst the sheep. Indeed the cause of the disease will be found a general one, and not depending upon the presence of any one plant or a combination of plants, which have been accused of being alike destructive to sheep, for the *Sun-dews* (*Drosera longifolia* and *rotundifolia*) are in the same predicament as this plant. But from repeated observations and trials made with sheep, we are convinced that it is the general nature of the food and the wet season, together with the humid soil saturated with stagnant moisture, that are the means of the disease being developed; and if the sheep are removed from these to dryer pastures and dryer and more substantial food, it will be found sufficient to prevent the appearance of the disease amongst them, and a great means of mitigating its violence when it has made its appearance.

The Fluke, or flounder insect, (*Fasciola hepatica*), found in the biliary ducts of the liver of sheep and other animals, is a very remarkable animal, (Fig. 524), flat, ovate, pointed at one end, and numerously branched over with veins, having very much the appearance of a leaf; at the broad extremity there is a narrow prolongation, on which are two suckers, by these they attach themselves to the sides of the ducts of the liver, and appear to live upon the secreted biliary matter, and when there are only a few present they do not seem to cause any injury to the animal; but as they become more numerous, the sheep, from the want of the proper supply of stimulus to the digestive organs, become unhealthy, the liver disorganised, and at length destroyed, from the disease produced.

Pennywort was formerly admitted into the list of some of the pharmacopœias, from the acrid properties that it is said to possess; but we are not aware that it is now used for any particular purpose. *H. Asiatica* is, we are told, used in India as a culinary vegetable, and also as a diuretic; and some other species are said to possess like properties, but none are very active, or of much value.

TRIBE 2. SANICULÆE. *Fruit* nearly round. *Carpel* with five equal primary *ridges*, the secondary wanting, or all the ridges are obliterated by scales or prickles. *Albumen* on a transverse section, nearly round, plain in front. *Petals* erect, a little broken on the margin in the middle. *Umbel* simple, or irregularly sub-compound, or in a head.

GENUS XLVII. SANI'CULA.—LINN. *Sanicle*.

GEN. CHAR. *Calyx* with a five toothed leafy margin. *Petals* erect, obovate, notched, with a slender inflexed point, as long as the petal. *Fruit* sub-globose, densely clothed with hooked prickles, without *ridges*, but with many *vittæ*. *General involucre* lobed, *partial*, of many lanceolate segments.—Name from *sano*, to *heal*; from its supposed virtues "to make whole and sound all inward wounds and outward hurts."

1. *S. Europæa*, Linn. (Fig. 412.) *Wood Sanicle*. Lower leaves palmated with the lobes trifid, cut or serrated, perfect; flowers sessile, those with stamens only on short footstalks.

English Botany, t. 98.—English Flora, vol. ii. p. 36.—Hooker, British Flora, vol. i. p. 126.—Lindley, Synopsis, p. 127.

Root of numerous strong branched somewhat fleshy fibres. *Stem* erect, simple, or slightly branched, from ten to eighteen inches high, round, smooth, channeled, almost naked. *Leaves* almost all radical, on long smooth channeled footstalks, dilated and sheathing at the base, a bright shining green, paler on the under side, divided into five or seven almost separate segments, each of which is mostly three-cleft, irregularly cut, and sharply serrated, each serrature pointed with a sharp bristle, and sometimes the margins are ciliated, leaves of the stem alternate, frequently absent. *General umbel* of numerous unequal *radii*, *partial* umbels small, those on the shorter pedicles bearing flowers on short footstalks containing stamens only, while those on the longer pedicles bear flowers, nearly sessile and perfect, containing stamens and pistils. *General involucre* of several lobed leafy segments, the *partial* of numerous lanceolate ones. *Flowers* very small, white or pinkish, numerous, crowded in small round umbels. *Calyx* of five lanceolate leafy segments, bristle pointed. *Petals* rather longer than the calyx, obovate, erect, with a crenated margin, apparently caused by the mid-rib, which is lengthened out into a long bristle-like point, and then closely curved inwards, giving the petal the appearance of being notched at the extremity. *Stamens* on long slender filaments, curved inwards before the bursting of the ovate two celled *anthers*. *Style* recurved, about as long as the petals. *Stigma* small, obtuse. *Fruit* sub-globose, densely clothed with hooked rigid bristles.

Habitat.—Shady woods and humid situations; frequent.

Perennial; flowering in May and June.

Sanicle, formerly much extolled for its sanative properties, is slightly astringent, with a bitterish acrid taste; but its virtues are so limited, that it is not now thought worthy of a place even in the catalogue of the remedial plants of our country dames.

GENUS XLVIII. ERYN'GIUM.—LINN *Eryngo*.

GEN. CHAR. *Calyx* with a five toothed leafy margin. *Petals* erect, oblong, notched, with a slender abruptly inflexed point, the length of the petal. *Fruit* obovate, densely clothed with pointed scales, without ridges or vittæ. *Involucre* of several leaves. *Flowers* blue, upon a scaly receptacle, collected into an oblong compact head.—Name from *εργυριον*, to *eructate*.

1. *E. maritimum*, Linn. (Fig. 413.) *Sea Eryngo*, *Sea Holly*. Leaves glaucous, white, the radical ones roundish, heart-shaped, undivided, plaited spinous, on footstalks, the upper ones embracing the stem, sub-palmate, lobed, rigid, spiny; involucre of lobed spiny segments, longer than the sub-rotundate heads of flowers, scales of the receptacle three lobed.

English Botany, t. 718.—English Flora, vol. ii. p. 35.—Hooker, British Flora, vol. i. p. 126 —Lindley, Synopsis, p. 127.

Root very long, round, stout, white, fleshy, of a warm aromatic flavour. The whole plant quite smooth, rigid, of a glaucous pale blueish green colour. *Stem* roundish, striated, branched, leafy, about a foot high. *Leaves* beautifully variegated with whitish veins and ribs, and a broadish obtuse margin, the *radical ones* on footstalks, with a dilated base, roundish, heart or kidney-shaped, undivided, plaited or lobed with deep wide spreading rigid spiny teeth, the *stem leaves* sessile, embracing the stem, roundish, oblong, simple or divided, with deeply lobed spiny spreading teeth. *Involucre* of numerous large leafy segments, similar to the leaves, longer than the roundish heads of crowded blue flowers. *Common receptacle* conical, scattered over with simple scales, terminating in sharp spines, or mostly three lobed, one scale at the base of each sessile flower. *Calyx* with a limb of five lanceolate single ribbed segments, longer than the corolla. *Petals* erect, alternating with the segments of the calyx, oblong, deeply cleft at the apex, from its long narrow point being abruptly curved inwards. *Stamens* alternating with the petals. *Filaments* long, slender, curved inwards, until the ovate yellow *anther* bursts. *Styles* as long as the corolla, simple. *Stigmas* simple, obtuse. *Fruit* obovate, nearly round, on a transverse section, closed with pointed scales, without ridges or vittæ.

Habitat.—Sandy sea shores; frequent.

Perennial; flowering from July to August.

The compact ovate heads of sessile flowers of this genus has much the resemblance to those of the compound flowers in class Syngenesia. Upon examination, however, they will be found very different, but resemble those of the genus *Dipsacus* (page 173). The root of this plant has a warm aromatic flavour, and was once famed as a stimu-



411

Hydrocotyle vulgaris.



412

Sanicula europaea.



413

Eryngium maritimum.



414

Eryngium campestre.



415

Bupleurum odontites.



416

Bupleurum tenuissimum.

lant and restorative when candied with sugar; and from Shakspeare's account by Falstaf, was much esteemed when made into "kissing comfits;" it has also been used in medicine as a stimulating tonic, but its power is so slight as now to be discarded. The young tops are said to be used in Sweden and Crete in the same way as asparagus.

2. *E. campes'trie*, Linn. (Fig. 414.) *Field Eryngo*. Leaves reticulated with veins, teeth spinous, the radical ones on footstalks, subternate, the lobes pinnatifid, the upper ones embracing the stem, with deep narrow rigid spinous teeth; involucre of numerous lanceolate spinous segments, longer than the small sub-rotundate heads of flowers, scales of the receptacle entire.

English Botany, t. 57.—English Flora, vol. ii. p. 35.—Hooker, British Flora, vol. i. p. 127.—Lindley, Synopsis, p. 127.

Root long, round, stout, flesh. *Stem* round, smooth, striated, very much branched above in a corymbose manner, and leafy, of a pale glaucous green. *Leaves* numerously netted with pale veins and an obtuse margin, the *radical ones* large, on long stout footstalks, finely striated, divided into three, the middle one largest, deeply divided in a pinnatifid manner, lobed, and the margin with teeth, pointed with long sharp spines, the stem leaves sessile, opposite, embracing the stem with a spinous auricular appendage on each side, deeply divided into three lobes, in a pinnatifid manner, with long narrow spinous teeth. *Involucre* of numerous narrow lanceolate spinous segments of variable lengths, some longer than the heads of flowers, some shorter. *Flowers* numerous, white or purplish, on a conical receptacle, each flower having at its base a long narrow simple spinous scale. *Calyx* with a limb of five lanceolate single ribbed spinous segments, longer than the corolla. *Petals* erect, alternating with the segments of the calyx, oblong, notched at the apex, between which is abruptly inflexed a long narrow point, as long as the petal. *Stamens* alternating with the petals. *Filaments* long, slender, curved inwards, until the oblong purplish anther bursts. *Styles* long, slender, spreading. *Stigmas* simple, obtuse. *Fruit* oblong, ovate, nearly round, on a transverse section closely covered with pale thin membranous pointed scales, without ridges or vittæ.

Habitat.—Waste sterrile ground, especially near the sea; very rare. Near Plymouth; Newcastle-upon-Tyne, and St. Peter's Quay, Northumberland; near Davenport; and in Ireland, near Lismore, Waterford.—*Mr. Drummond*.

Perennial; flowering in July and August.

This species, very frequent on the Continent, possesses similar properties to the above, and appears to have been used for the same purposes; but, like it, is now out of use.

TRIBE 3. AMMINEÆ. *Fruit* evidently compressed at the sides, and mostly double. *Carpel* with five primary ridges, filiform, rarely slightly winged, the lateral ones forming the margin of the same size as the others. *Albumen* rounded, or slightly gibbous at the back, in front plain or rounded. *Umbel* perfect, compound.

GENUS XLIX. BUPLEURUM.—LINN. *Hare's Ear*.

GEN. CHAR. *Calyx* limb obsolete. *Petals* roundish, entire, broad, closely rolled inwards, the sides depressed. *Fruit* laterally, compressed, crowned by the recurved *styles* and depressed *disk*. *Carpels* with five equal winged acute filiform or obsolete *ridges*, the lateral ones forming the margin. *Channels* with or without *vittæ*. *Albumen* plain in front. *Involucre* various. *Flowers* yellow. *Leaves* undivided.—Named from βους, an ox; and πλιυρον, a rib; in allusion to the remarkably ribbed leaves of some of the species.

* *Annual*.

1. *B. Odontites*, Linn. (Fig. 415.) *narrow leaved Hare's Ear*. Stem branched, widely spreading; leaves linear, lanceolate, three ribbed; general and partial involucre of four or five lanceolate segments, with rigid points, each three ribbed, and longer than the umbels.

English Botany, t. 2468.—English Flora, vol. ii. p. 93.—Hooker, British Flora, vol. i. p. 130.—Lindley, Synopsis, p. 120.—*B. aristatum*, Bartling.—*Odontites lutea*, Spreng.

Root small tapering. *Stem* from one to five inches high, smooth, somewhat angular, leafy, branched, and spreading. *Leaves* linear, lanceolate, sessile, with an acuminate point, and three nerved, from one to two inches long, the lower ones tapering into a footstalk, pale, yellowish, green. *Umbels* small, lateral and terminal, erect, or spreading, enveloped in the lanceolate leaves of the *involucre*, those of the *general* one three or five ribbed, the *partial* ones mostly three, longer than the *umbels*, the *peduncles* very short. *Calyx* without any limb. *Petals* small, yellow. *Stamens* with slender *filaments*, bearing rather large yellow *anthers*. *Styles* very short, from a depressed base. *Fruit* ovate, compressed on the sides with five indistinctly elevated *ridges*, the two marginal ones of each *carpel* united, appearing until separated as one.

Habitat.—Rocks in the neighbourhood of Torquay, Devonshire; rare.

Annual; flowering in July.

This little plant is frequent on the Continent, especially in the

southern countries, growing in dry open sunny situations. It has a slight degree of bitterness and astringency, but is not, we believe, applied to any use.

2. *B. tenuissimum*, Linn. (Fig. 416.) *slender Hare's Ear*. Stem erect, much branched, slender; leaves linear, lanceolate; umbels terminal and lateral, small, of three rays, mostly shorter than the setaceous involucre; carpels granulated, its five ridges waved and granulated.

English Botany, t. 478.—English Flora, vol. ii. p. 94.—Hooker, British Flora, vol. i. p. 131.—Lindley, Synopsis, p. 120.

Root small, tapering, zig-zag, branched. *Stem* erect, very much branched from the base upwards, round, smooth, slender, wiry, from six to eighteen inches high. *Leaves* few, distant, linear, lanceolate, with a sharp point, three ribbed, alternate, the lower ones tapering into a footstalk of variable length, quite smooth, of a glaucous green. *Umbels* very small, sessile, axillary, terminal, or on short footstalks, solitary, or disposed along the branches in a spike-like manner. *Involucre* mostly of five setaceous pungent segments, longer than the umbels. *Flowers* small, yellow, from three to five, in an umbel or unequal peduncles. *Calyx* with an obtuse rim, the obsolete limb. *Petals* very small. *Style* very short, from a depressed fleshy base. *Fruit* oblong, ovate, with compressed sides, finely granulated, its five ridges three at the back, and two forming the margins, uniting the carpels together, obtuse, waved and granulated. *Albumen* nearly cylindrical, slightly flattened in front.

Habitat.—Salt marshes on the south and east coasts of England; not common.

Annual; flowering in August and September.

3. *B. rotundifolium*, Linn. (Fig. 417.) *common Hare's Ear*, *Thorow-wax*. Stem branched; leaves roundish, oval, perforated, the lower ones narrow at the base, embracing the stem; general involucre wanting, partial ovate, with bristle points; ridges of the fruit filiform; channels striated.

English Botany, t. 99.—English Flora, vol. ii. p. 93.—Hooker, British Flora, vol. i. p. 130.—Lindley, Synopsis, p. 120.

Root tapering, branched, white. *Stem* erect, about a foot high, round, smooth; finely striated, branched and spreading, somewhat corymbose above, often of a purplish colour. *Leaves* numerous, of a pale glaucous green, each with a mid-rib, terminating in a bristle point, and with numerous fine branched veins, the lower leaves oblong, narrowing at the base, sessile, and embracing the stem, the upper ones roundish, oblong, perforated, alternate. *Umbels* terminal, compound, of about six rays. *General involucre* wanting, *partial* of about four mostly unequal ovate acute bristle pointed veiny segments, of a pale

yellowish green colour, spreading when in flower, becoming erect in fruit, and meeting closely over the partial umbels, than which they are much longer, *partial umbels* of numerous yellow *flowers*, on short peduncles. *Calyx* limb obsolete. *Petals* small, closely rolled inwards, the margin waved, veiny. *Stamens* alternating with the petals, on short *filaments*, bearing yellow ovate *anthers* of two cells, *disk* large, depressed, fleshy. *Styles* very short. *Stigmas* simple, obtuse. *Fruit* oblong, with five slender filiform primary *ridges*, the channels striated, and without *vittæ*.

Habitat.—Corn fields in England, especially on a chalky or limestone soil.

Annual; flowering in July.

A plant formerly numbered amongst those that were thought to have a healing effect, and this was especially supposed to have the power of curing ruptures. It is, we hope, needless to add that to such virtues wholly unfounded in reason, no one is now so foolish as to trust in such dangerous cases as ruptures.

B. rotundifolium is nearly allied to *B. protractum*, a species not unfrequent on the Continent, distinguished by its stem being branched from the base, and the leaves more oblong and larger than in *B. rotundifolium*. The fruit is about the same size with filiform ridges, but the channels between are granulated, and not striated, as in *B. rotundifolium*; and the involucre is always spreading, which in *B. rotundifolium* become erect after flowering, and close over the fruit. The general appearance of the two plants are so similar, that we think it probable they may have been overlooked as the same species; and we hope this notice will direct the attention of the Botanist to the more minute investigation of the plants found in different parts of England, and especially in the Southern Counties.

** *Perennial*.

4. *B. falcatum*, Linn. (Fig. 418.) *falcate-leaved Hare's Ear*. Stem erect, branched; leaves from five to seven, nerved, the radical ones ovate oblong, on long footstalks, the upper sessile, linear, lanceolate; general involucre of about five unequal segments, the partial of five, broadly lanceolate, as long as the umbels; fruit with narrow winged ridges; channels plane, with three *vittæ*.

Corder in English Botany Suppt. t. 2763.—Hooker, British Flora, vol. i. p. 131.—Lindley, Synopsis, Suppt. p. 324.

Root woody, twisted and branched. *Stem* erect, from one to four feet high, round, smooth, striated, much branched above with alternate branches in a paniculated manner, often zig-zag. *Leaves* alternate, from five to seven, the lower ones sometimes nine, ribbed, of a dark somewhat glaucous green, paler beneath, quite smooth, the lower leaves ovate or ovate oblong, attenuated at the base into a long slender



417 *Bupleurum rotundifolium.*



418 *Bupleurum falcatum.*



419 *Apium graveolens.*



420 *Petroselinum sativum.*



421 *Petroselinum segetum.*



422 *Trinia glaberrima.*

footstalk, channeled above, the upper ones linear, lanceolate, sessile, with an acute point, curved in a falcate manner. *Umbels* terminal, compound, of from four to ten slender mostly unequal rays. *General involucre* of from one to five unequal lanceolate or ovate segments, and sometimes they are wanting, *partial* of five equal broadly lanceolate fine pointed three ribbed segments, as long as the *partial umbels*, of numerous yellow *flowers*, on short pedicles. *Petals* small, with a single rib and incurved point. *Anthers* small, ovate, on incurved *filaments*. *Styles* short, spreading. *Stigma* simple, somewhat capitate, *disk* large, flat, depressed, yellow, fleshy. *Fruit* ovate oblong, with compressed sides, and five narrow somewhat winged and slightly waved primary ridges, the channels between plain, smooth, with three small *vittæ*.

Habitat.—Borders of fields between High Ongar and Chelmsford, Essex, growing by the road side within the field for nearly a mile.—*Mr. T. Corder, jun.*

Perennial; flowering in June.

GENUS L. A'PIUM.—LINN. *Celery*.

GEN. CHAR. *Calyx* limb obsolete. *Petals* roundish, entire, with an involute point. *Fruit* roundish, laterally contracted, double. *Carpels* with five filiform equal ridges, the two lateral ones forming the margin. *Channels* with single *vittæ*, the outer ones sometimes having two or three. *Albumen* very convex at the back, plain in front. *Involucre* wanting. *Flowers* white.—Name from "*apon*, water, in Celtic; from the place where the plant grows."

1. *A. graveolens*, Linn. (Fig. 419.) *Smallage* or *wild Celery*. Smooth; leaves pinnate; leaflets wedge-shaped, lobed and toothed at the apex.

English Botany, t. 1210.—English Flora, vol. ii. p. 76.—Hooker, British Flora, vol. i. p. 127.—Lindley, Synopsis, p. 123.

Root somewhat tapering and branched. The whole plant smooth and shining, of a dark green. *Stem* erect, much branched and spreading, furrowed, from one to two feet high, leafy. *Leaves* alternate, pinnate, the lower on long channeled footstalks, the *leaflets* large, wedge-shaped, three lobed, and irregularly toothed, with slender branched veins, the upper leaves on short stalks, ternate, lobed and toothed, or sometimes lanceolate toothed. *Umbels* terminal and lateral, on footstalks, or sessile, of from four to ten unequal *rays*, the *partial umbels* of numerous small white *flowers*, on short slender pedicles. *General* and *partial involucre* wanting. *Calyx* limb

obsolete. *Petals* entire, roundish, with a small abruptly inflexed point, and a greenish mid-rib. *Stamens* about as long as the petals, with incurved *filaments*, and bearing roundish *anthers* of two cells. *Fruit* rather small, roundish, oblong, quite smooth. *Carpels* closely united, the thread-like ridges equal, the two lateral ones forming the margins, the channels have one, or the outer ones have three *vittæ*. *Albumen* very convex, almost gibbous at the back, plain in front.

Habitat.—Moist marshy places, and on the banks of rivers, especially near the sea; not unfrequent, in England; Musselburgh, in Scotland. Plentiful near Irishtown and Baldoyle, and various places on the Dublin coast, Ireland.

Biennial; flowering in August.

This, the well known culinary plant of our gardens, appears to have been grown for domestic use in the time of Pliny, and probably before. It is one of the many remarkable instances we have of the conquest of cultivation, and the power which it possesses in changing that which is dangerous into a bland and grateful vegetable, subservient to our use; for Celery, in its wild state, is very acrid, with a strong disagreeable smell, and is said to be poisonous; but when it is cultivated it loses all its noxious properties, and becomes one of our most mild and pleasant garden vegetables: and to see, as sometimes is the case, a single plant with the footstalks of the leaves three feet long, blanched a beautiful white, with a mild agreeable flavour, and the plant weighing six pounds, it scarcely appears credible that it should have been produced from a noxious weed, which, when the stem is full grown, rarely exceeds two feet high, and does not weigh more than an ounce or two.

GENUS LI. PETROSELI'NUM.—HOFFM. *Parsley*.

GEN. CHAR. *Calyx* limb obsolete. *Petals* roundish, entire, slightly emarginate, with a narrow incurved point. *Fruit* ovate, laterally, contracted, nearly double. *Carpels* with five filiform equal ridges, the two lateral ones forming the margin. *Channels* with single *vittæ*. *Albumen* very convex at the back, plain in front. *General involucre* of few, *partial* of many, segments.—Name from *πετρος*, a stone; from the circumstance of the plants of this genus growing in rocky or stony places.

1. *P. sativum*, Hoff. (Fig. 420.) *common Parsley*. Stem erect, striated; leaves doubly compound, shining; leaflets of the lower leaves ovate, wedge-shaped, three-cleft, and toothed; upper leaflets lanceolate, entire, three-cleft; partial involucre of awl-shaped segments.

Borrer, in English Botany Suppt. 2793.—Hooker, British Flora, vol. i. p. 127.—*Apium Petroselinum*, Linn.

Root long, fusiform, white. The whole plant a smooth shining green. *Stem* erect, from one to two feet high, round or angular, striated, alternately branched below, opposite above, spreading. *Leaves* numerous at the base of its stem, footstalks channeled, dilated at the base with a thin-membranous margin, partly embracing the stem, lower leaves doubly compound, the leaflets ovate, wedge-shaped, mostly deeply divided into three segments, acute, and deeply toothed, leaflets of the upper leaves with simply three-cleft lanceolate mostly entire segments. *Umbels* terminal, compound, the *general* of numerous somewhat unequal rays, the *partial* numerous, short, unequal. *General involucre* of a few narrow lanceolate entire or occasionally toothed unequal segments, mostly with membranous margins, sometimes altogether wanting, the *partial* of numerous awl-shaped segments, with membranous margins. *Flowers* numerous, yellowish white. *Calyx* limb obsolete. *Petals* roundish, notched at the apex, with an elongated incurved point, mid-rib broadish green. *Stamens* with incurved filaments, as long as the petals. *Anthers* roundish, oblong, of two cells. *Styles* short, curved, with a thickened glandular base. *Stigma* simple. *Fruit* ovate.

Habitat.—Old walls and dry waste places; frequent in the South-west of England; Woollaton, near Nottingham.—*R. D.* Blarney Castle, near Cork, Ireland.—*Mr. Wilson*.

Biennial; flowering in June and July.

Parsley is a well known pot herb, used for a variety of culinary purposes. Its leaves, and the greenish aspect of the plant, are similar to those of some other umbellate plants, and especially the *Æthusa Cynapium*, fool's parsley, which is a common weed in gardens, and is considered very unwholesome. It is readily distinguished from the real parsley by the three long pendent segments of the partial involucre, and the unpleasant odour emitted by its leaves when bruised. The roots and seed of the common parsley were formerly directed for medical use, the former having a sweet taste, somewhat resembling that of carrots: they are slightly aperient and diuretic, and used in the form of an infusion, are of benefit in obstructions of the kidneys, and other of the urinary passages. They are warm, aromatic, and more bitter than any other part of the plant; but we are not aware of their being much used for their carminative properties. A variety, *crispum*, is much cultivated in gardens, having the leaves very much curled and larger, remarkably beautiful, especially for the garnishing and ornamenting of cold meats, &c. &c.

2. *P. segetum*, Koch. (Fig. 421.) *Corn Parsley*. *Stem* erect, almost naked; leaves pinnated; leaflets of the lower ones ovate, nearly sessile,

cut, and irregularly serrated, the upper with linear segments; involucre of two or three linear segments; general and partial umbel of a few very irregular rays.

English Botany, t. 228.—English Flora, vol. ii. p. 60.—Hooker, British Flora, vol. i. p. 127.—Lindley, Synopsis, p. 123.—*Sison segetum*, Linn.

Root small, tapering. *Stem* erect, round, smooth, striated, from one to two feet high, much branched, and spreading on all sides, tough and wiry. *Leaves* mostly on the lower part of the stem, on long narrow channeled footstalks, pinnated, leaflets nearly sessile, in opposite pairs, ovate, or roundish oblong, lobed, cut and toothed, or serrated, sometimes they are large, ovate-lanceolate, with two distinct ovate lobes at the base, the upper leaves with mostly three linear segments. *Umbels* terminal, compound, the *general* of from three to six rays, of irregular lengths, *partial* of three to six short very irregular pedicles. *General involucre* of about three linear segments, *partial* of three or four small lanceolate segments, of unequal sizes. *Flowers* white or pinkish. *Calyx* limb obsolete. *Petals* roundish, notched at the apex with an elongated shortly incurved point. *Stamens* on short filaments. *Anthers* roundish, ovate. *Styles* very short, with a thickened fleshy at length depressed base, crowning the fruit. *Stigmas* simple, obtuse. *Fruit* ovate, the sides slightly compressed. *Carpels* with five pale obtuse filiform ridges, the lateral ones forming the margins, nearly united. *Channels* with single slender vittæ. *Albumen* very convex, almost conical at the back, flat in front.

Habitat.—Moist fields and meadows, especially on a calcareous soil; in the middle and southern parts of England. "Said to have been found in one of the Hebrides by the late Dr. Walker."

Annual; flowering in August.

GENUS LII. TRINIA.—HOFFM. *Honewort*.

GEN. CHAR. *Calyx* limb an obsolete margin. *Petals* of the barren plant lanceolate, with a narrow inflexed point, those of the fertile ovate, with a short inflexed point. *Fruit* ovate, laterally compressed. *Carpels* with five prominent filiform equal ridges, the two lateral ones forming the margins. *Channels* with obscure vittæ, but with a distinct channel under each ridge. *Albumen* very convex at the back, plain in front. *Involucre* various.—Named in honour of Dr. C. B. Trinius, a learned Botanist of St. Petersburg, author of a *Species Graminum*, &c.

1. *T. glaberrima*, Hoffm. (Fig. 422.) glabrous Honewort. Smooth

leaves, tripinnate, with linear segments; umbels numerous, simple, and compound; involucre of a single segment, or wanting.

Hooker, British Flora, vol. i. p. 128.—Lindley, Synopsis, p. 123.—*Pimpinella dioica*, Linn.—English Botany, t. 1209.—English Flora, vol. ii. p. 90.

Root tapering, fleshy. The whole plant smooth, or nearly so, of a pale glaucous green. *Barren plants* smaller and less spreading than the *fertile* ones. *Stem* erect, angular, furrowed, frequently purplish, branched from the base, and leafy, branches alternate, sometimes opposite above. *Leaves* numerous, on channeled footstalks, dilated at the base, and partly embracing the stem, tripinnate, leaflets linear, lanceolate, simple, entire, the terminal ones mostly united in threes. *Umbels* mostly numerous, simple, and compound, the *general* of about eight slender channeled *rays*, mostly of unequal lengths, *partial* of from four to ten irregular short pedicles. *Flowers* white or pinkish. *Calyx* limb an obsolete margin, *barren* flowers without. *Involucre* both general and partial mostly absent, or only of one segment, *germen* and the *fertile* bearing imperfect anthers. *Styles* spreading. *Stigmas* almost globular. *Fruit* ovate, slightly compressed on the sides.

Habitat.—Dry barren places in limestone districts; rare. On St. Vincent's rock, near Bristol; at Uphill, Somersetshire; Whorlhill, Somerset; said to have been found by *Dr. Wade*, at Athboy, Ireland.

Perennial; flowering in May and June.

GENUS LIII. HOLOSCIA'DIUM.—Koch. Marsh-wort.

GEN. CHAR. *Calyx* limb of five teeth, or obsolete. *Petals* ovate, entire, with a straight or inflexed point. *Fruit* ovate or oblong, laterally compressed. *Carpels* with five filiform prominent equal ridges, the lateral ones forming the margins. *Channels* with single *vittæ*. *Albumen* convex at the back, plain in front. *Involucre* various.—Name from *ελος*, a marsh; and *σκιαν*, an umbel.

1. *H. nodiflorum*, Koch. (Fig. 423.) procumbent Marsh-wort. Stem procumbent, and rooting at the base; leaves pinnate; leaflets sessile, ovate-lanceolate, obtusely serrated; umbels opposite the leaves, sessile, or on short peduncles.

Hooker, British Flora, vol. i. p. 128.—Lindley, Synopsis, p. 122.—*Sium nodiflorum*, Linn.—English Botany, t. 639.—English Flora, vol. ii. p. 57.

Stem long, procumbent at the base, putting out at the joints tufts of long slender branched fibrous roots, the stem is erect above, round, smooth, finely striated, branched and leafy. *Leaves* alternate, pinnated,

common stalk long channeled, dilated at the base, and sheathing, bearing about three pairs of ovate-lanceolate leaves, and an odd one at the end, having a slender mid-rib, and numerous finely branched veins, the margins blunt, and somewhat irregularly serrated, of a shining green, paler beneath, the terminal leaf is sometimes united to the two upper ones, and the margins cut, as well as serrated. *Umbels* lateral, opposite the leaves, and either sessile or on a short stalk; the *general* of about six slender angular mostly unequal rays; the *partial* of numerous short nearly equal pedicles. *Flowers* white. *General involucre* of one segment, or mostly wanting; the *partial* of five or six lanceolate segments, about the length of the umbel, pale green, with three to six ribs, and a narrow membranous margin. *Calyx* limb an obtuse margin. *Petals* ovate, somewhat incurved, with a lanceolate point. *Stamens* on slender awl-shaped *filaments*. *Anthers* roundish, of two cells. *Styles* very short. *Disk* large, fleshy, depressed. *Fruit* with the sides compressed, ovate, the *ridges* prominent, obtuse, pale, channels with slender *vittæ*. *Albumen* rounded at the back, plain in front.

Habitat.—Sides of lakes, rivers, and in drains; frequent.

Perennial; flowering in July and August.

The juice of this plant has been recommended for the cure of some diseases of the skin; two table spoons full, mixed with a little milk. It has not any unpleasant taste, and may be administered without difficulty to children, and in some cases it has been found beneficial; but it is not now in much use, except amongst the country people, and they not unfrequently eat it as a salad, mixed with the leaves of the common water cress, for which it is indiscriminately gathered, a mistake of no consequence to the consumer, if his palate does not detect it.

2. *H. re'pens*, Koch. (Fig. 424.) *creeping Marsh-wort*. Stem creeping and rooting at the joints; leaves pinnate, roundish, ovate, lobed, unequally toothed and serrated; umbels on short peduncles, opposite the leaves.

Hooker, British Flora, vol. i. p. 128.—Lindley, Synopsis, p. 122.—*Sium, repens*, Linn.—English Botany, t. 1431.—English Flora, vol. ii. p. 58.

Root of long slender much branched-fibres. *Stems* several, round, smooth, finely striated, creeping, putting out roots from the axis of the branches, which are distant, alternate, and bearing but few leaves, from six to ten inches long. *Leaves* on long channeled footstalks, dilated and sheathing at the base, with thin membranous edges, leaflets from three to five pairs, and an odd one at the end, roundish, ovate, sometimes lobed, unequally toothed and serrated, the terminal one mostly three lobed, finely veined. *Umbels* opposite the leaves, on

short peduncles; the *general* of from three to six rays, of unequal lengths; *partial* numerous, short, unequal. *Flowers* white, small. *General involucre* of about six lanceolate segments, frequently wanting; *partial* of about six, as long as the umbels. *Calyx* limb an obtuse margin. *Petals* roundish, ovate, with a short point, rolled inwards. *Stamens* about as long as the petals, with slender filaments and roundish anthers. *Styles* very short, curved. *Stigmas* obtuse. *Fruit* small, roundish oblong, similar to the last species.

Habitat —Boggy meadows and watery places. In Oxfordshire, Cambridgeshire, Bedfordshire, and Nottingham meadows. Side of the river Fergus, a little above the bridge Ennis, Ireland. Near Edinburgh, and banks of a pond at Fisharrow, and at Guillon Links, Scotland.

Perennial; flowering in July and August.

It is very doubtful if this is any more than a variety of the above species. The whole plant is smaller, its branches less numerous and creeping, and the umbels are stalked, not sessile; the leaves are rounder, and generally more lobed and irregularly toothed.

3. *H. inunda'tum*, Koch. (Fig. 425.) *least Marsh-wort*. Stem creeping at the base, and rooting; leaves pinnate the submersed ones, with capillary much divided leaflets, the upper wedge-shaped, cut and toothed; umbels on short peduncles, of two rays opposite the leaves.

Hooker, British Flora, vol. i. p. 128.—Lindley, Synopsis, p. 122.—*Sison inundatum*, Linn.—English Botany, t. 227.—*Sium inundatum*, Roth.—English Flora, vol. ii. p. 58.—*Hydrocotyle inundatum*, Smith.—Flora. Brit. p. 290.

Root of long slender branched fibres from the axis of the lower branches. *Stem* slender, round, smooth, succulent, somewhat striated, varying considerably in length, from a few inches to two feet, branched and leafy. *Leaves* alternate, on somewhat channeled footstalks, dilated and sheathing at the base, where it is striated, and with a thin pale membranous margin; the *lower* leaves, when submerged in water, are repeatedly divided into long slender hair-like segments, becoming in the upper part of the stem broader, at length in four or five pairs of wedge-shaped leaflets, deeply cleft into narrow lanceolate segments, the upper leaves with ovate leaflets, toothed and lobed, the terminal one three-cleft. *Umbels* on short stalks, opposite the leaves; the *general* of two rays; the *partial* of about six short ones. *Flowers* small, white. *General involucre* wanting, *partial* of four or five unequal lanceolate segments. *Calyx* limb an obtuse margin. *Petals* ovate, with a somewhat incurved point. *Stamens* on short filaments, with small round anthers. *Style* short, curved. *Stigma* obtuse. *Fruit* oblong. *Carpels* with five prominent obtuse pale ridges. *Channels* with slender simple vittæ. *Albumen* nearly round, on a transverse section, but slightly flattened in front.

Habitat.—Pools, lakes, and inundated places that are dried up in the Summer; not unfrequent.

Perennial; flowering from May to July.

This plant is readily known from all other of our umbellate plants by its slender creeping stems, its variable leaves, and small umbels of few flowers.

GENUS LIV. SISON.—LINN. *Bastard Stone Parsley*.

GEN. CHAR. *Calyx* margin obsolete. *Petals* roundish, deeply notched and curved with an inflexed point. *Fruit* ovate, laterally compressed. *Carpels* with five filiform equal *ridges*, the lateral ones forming the margins. *Channels* with short single club-shaped *vittæ*. *Albumen* convex at the back, plain in front. *General* and *partial involucre* of few segments.—Name, according to Thëis, originating in the Celtic *sizun*, a *running brook*; some of the plants formerly placed in this genus delighting in such situations.

1. *S. Amo'mum*, Linn. (Fig. 426.) *Hedge Bastard Stone Parsley*.

English Botany, t. 954.—English Flora, vol. ii. p. 60.—Hooker, British Flora, vol. i. p. 129.—Lindley, Synopsis, p. 122.

Root tapering, fleshy. *Stem* erect, from three to four feet high, with numerous alternate slender wiry branches, smooth, striated. *Leaves* pinnate, of a dark green, smooth, *leaflets* ovate, deeply cut and serrated, the terminal one mostly three lobed, the upper leaves cut into narrow unequally serrated segments, footstalks with a dilated membranous edge, the base half embracing the stem. *Umbels* mostly numerous; *general* of about four unequal *rays*; *partial* of numerous short unequal ones. *Involucre* irregular; *general* of about four lanceolate segments; *partial* of about four smaller ones. *Flowers* white, or straw colour. *Calyx* an obtuse margin. *Petals* roundish, or inversely heart-shaped, from being deeply notched at the extremity by the inflexion of the small point. *Stamens* alternating with the petals. *Filaments* slender. *Anthers* yellow, small, roundish. *Styles* very short. *Stigma* obtuse, small. *Disk* large, swollen fleshy. *Fruit* small, ovate. *Carpel* sides somewhat compressed, with obtuse *ridges*, three at the back, the two lateral ones forming the margin. *Vittæ* small, club-shaped. *Albumen* on a transverse section, very convex at the back, compressed, or slightly plain in front.

Habitat.—Chalky and limestone districts, in a moist soil in shady situations; not very frequent in England. Near Coldstream, Scotland.—Miss E. Bell.

Biennial; flowering in August.



423

Holosciadium nodiflorum.



424

Holosciadium repens.



425

Holosciadium inundatum.



426

Sison amomum.



427

Eriopodium podagraria.



428

Carum carui.



The seeds, when bruised, have a pungent aromatic smell; but when young, they, like the rest of the plant, have a disagreeable odour, resembling, according to Smith, that of *Bugs*.

GENUS LV. ÆGOPO'DIUM.—LINN. *Goutweed*.

GEN. CHAR. *Calyx* margin obsolete. *Petals* obovate, notched and curved with an inflexed point. *Fruit* oblong, laterally compressed. *Carpels* with five filiform *ridges*, the lateral ones forming the margin. *Channels* without *vittæ*. *Albumen* roundish, convex, somewhat plain in front. General and partial *involucre* wanting.—Name from *αἴξ*, *αἴγος*, a goat; and *πους*, a foot, from the supposed resemblance of the leaves to a goat's foot.

1. *Æ. Podagra'ria*, Linn. (Fig. 427.) *Goutweed*, or *Herb Gerarde*. English Botany, t. 941.—English Flora, vol. ii. p. 77.—Hooker, British Flora, vol. i. p. 129.—Lindley, Synopsis, p. 123.

Root long, creeping, putting up stems at various distances. *Stem* erect, from one to two feet high, round, smooth, furrowed, branched above, and leafy. *Leaves* smooth, with a strong mid-rib and numerous lateral branched veins, pale and somewhat glaucous beneath, the *radical* ones on long footstalks, twice ternate, the leaflets ovate-lanceolate, with an acute point, the lateral ones mostly obliquely cut on the upper side, and the terminal one larger and broader, the *upper* ones mostly opposite, ternate, narrower, lanceolate, more unequally and acutely serrated than the lower ones, and the footstalks of the leaf broadly dilated and sheathing the stem. *Umbels* terminal, the *general* of numerous unequal angular *rays*, smooth, or sometimes downy, as are the more numerous short unequal rays of the *partial* umbels. *Involucre* both general and partial wanting. *Flowers* white. *Calyx* an obtuse margin. *Petals* obovate, slightly notched at the extremity from the inflexed point, which is slender, and about half as long as the petal. *Stamens* with slender *filaments*, and small round *anthers*. *Styles* long, slender. *Stigmas* somewhat globose, obtuse. *Carpels* with five slender filiform *ridges*, three on the back, and two lateral ones forming the margins, the *channels* without *vittæ*. *Albumen* on a transverse section, convex at the back, plain in front.

Habitat.—Gardens, under hedges, and wet places; frequent. Perennial; flowering in May and June.

Gout-weed by the ancients was supposed to possess active properties that were of considerable use in the relief of gout, (hence its English name), used in the form of poultice; but whatever arthritic virtues it may have possessed, appear now to have degenerated, and it has fallen into disuse.

GENUS LVI. CA'RUM.—LINN. *Caraway*.

GEN. CHAR. *Calyx* margin obsolete. *Petals* obovate, notched and curved with an inflexed point. *Fruit* oblong, laterally compressed. *Carpels* with five filiform *ridges*, the lateral ones forming the margin. *Channels* with single *vittæ*. *Albumen* roundish, convex, plain in front. General and partial *involucre* various.—Name derived, according to Pliny, from that of the country *Caria*.

1. *C. Ca'rui*, Linn. (Fig. 428.) *common Caraway*. Leaves doubly pinnate; leaflets cut into linear segments, the lower ones decussate; stem angular, branched; general *involucre* scarcely any; partial none.

English Botany, t. 1503.—English Flora, vol. ii. p. 86.—Hooker, British Flora, vol. i. p. 129.—Lindley, Synopsis, p. 122.

Root tapering. *Stem* from one to two feet high, erect, angular, smooth, furrowed, branched, and leafy. *Leaves* doubly pinnated, footstalk much dilated at the base into a thin ribbed membranous sheath, enveloping the stem, the lower ones alternate, the upper ones have each opposite the insertion of the footstalk a small sessile leaf of numerous linear segments. *Leaflets* in pairs, cut into narrow linear, simple or cleft segments; the lower leaflets cross each other (decussate) in their insertion, the upper ones opposite. *Umbels* numerous, terminal and lateral. *General* of numerous angular somewhat unequal *rays*, the *partial* dense, unequal. *General involucre* wanting, or of few narrow segments, the *partial* always wanting. *Flowers* white. *Calyx* an obsolete margin. *Petals* five, sometimes six, obovate, notched at the extremity with a slender obtuse inflexed point. *Stamens* on slender filaments, longer than the petals. *Anthers* small, roundish. *Styles* short. *Stigmas* small, globose. *Fruit* oblong, compressed on the sides. *Carpels* with five filiform *ridges*, three on the back, and two forming the margin. *Channels* smooth, each with a single simple *vittæ*. *Albumen* roundish at the back, somewhat flattened in front.

Habitat.—Meadows and pastures, in damp situations in various parts of England and Scotland.

Biennial; flowering in June.

The Caraway is a naturalised plant, probably at first escaped from gardens; now established in various parts of the country. Its seeds are well known as possessed of an agreeable aromatic quality, residing in the essential oil secreted in the *vittæ*; they are much used in domestic cookery, confectionery, and as a warm aromatic are admitted into our Pharmacopæias.

2. *C. verticilla'tum*, Koch. (Fig. 429.) *whorled Caraway*. Leaflets in short capillary whorled segments.

Hooker, British Flora, vol. i. p. 129.—Lindley, Synopsis, p. 122.—*Sison verticillatum*, Linn.—English Botany, t. 295.—*Sium verticillatum*.—English Flora, vol. ii. p. 59.

Root tapering. *Stem* erect, from one to two feet high, slender, round, smooth, finely striated, slightly branched, and almost naked. *Leaves* almost all from the base of the stem, footstalk long, round, finely striated, tapering, dilated and sheathing at the base. *Leaflets* opposite, divided nearly to the base into numerous narrow hair-like segments, which spread, and have the appearance of being whorled. *Umbels* terminal, *general* of numerous long slender unequal rays, *partial* of numerous short unequal ones. *General involucre* of about six narrow lanceolate segments, *partial* of about eight, ovate-lanceolate. *Flowers* white, numerous, crowded. *Calyx* an obtuse narrow margin. *Petals* five or six, obovate, slightly notched at the extremity with an inflexed obtuse point. *Stamens* five, as long as the petals. *Anthers* small, roundish. *Styles* as long as the stamens. *Stigmas* small, globose. *Fruit* oblong, with compressed sides. *Carpels* with five filiform obtuse ridges, three on the back, and two lateral ones forming the margins. *Channels* with single simple vittæ. *Albumen* round at the back, flattish in front.

Habitat.—Unknown to England; in the flat part of Wales; in Ireland, in a marsh near Lane Bridge, Killarney, and other places in Kerry, marshes in the district called Cranmore, near Belfast.—*Mr. Templeton*. Salt marshes below Coleraine, county of Derry.—*Mr. D. Moore*. Very abundant in moist pastures in the West of Scotland, especially near the sea.

Perennial; flowering in July and August.

GENUS LVII. BUNIUM.—Koch. *Earth-nut*.

GEN. CHAR.—*Calyx* margin obsolete. *Petals* obovate, slightly notched with an inflexed point. *Fruit* linear, oblong, laterally compressed, crowned by the conical disk and straight styles. *Carpels* with five equal obtuse filiform ridges, the lateral ones forming the margins. *Channels* with many vittæ. *Albumen* convex at the back, flat in front. *General involucre* none; *partial* of a few segments.—Named from *βουνος*, a hill, the situation in which the plants delight to grow.

1. *B. flexuosum*, With. (Fig. 330). common *Earth-nut*.

English Botany, t. 988.—English Flora, vol. ii. p. 54.—*Conopodium denudatum*, Koch.—Lindley, Synopsis, p. 121.—*Bunium denudatum*, De Cand.—*B. Bulbocastanum*, Hudson.

Root a solitary tuber, about the size of a nut. *Stem* erect, from one to two feet high, round, smooth, finely striated, slender, branched above, and bearing but few leaves, that part of the stem beneath the ground is very slender, tough, and wiry, waved. *Leaves* very few, pinnated, leaflets much divided into linear segments, quite smooth, dark green, the *radical* ones on long slender waved striated footstalks, the upper ones with very short dilated sheathing footstalks, and the leaflets with longer narrower segments. *Umbels* three or four, terminal, the *general* of numerous long slender angular, nearly equal *rays*, the *partial* of very numerous short crowded *rays*, mostly unequal in flower. *General involucre* wanting, or sometimes there are one or two narrow segments, *partial* either wanting or of a few narrow lanceolate segments. *Flowers* numerous, white. *Calyx* an obtuse slightly notched margin. *Petals* obovate, notched at the extremity with an obtuse inflexed point, about half as long as the petal. *Stamens* on slender *filaments*, longer than the petals. *Anthers* small, round. *Styles* short, straight, or spreading, with a conical *disk*, and small obtuse *stigma*. *Fruit* long, narrow, smooth, and shining, somewhat tapering above, and crowned by the conical disks, the sides slightly compressed. *Carpels* each with five slender *ridges*, the lateral ones forming the margins. *Channels* with numerous slender simple *vittæ*. *Albumen* rounded at the back, somewhat flattened in front.

Habitat.—Woods and pastures; frequent.

Perennial; flowering in May and June.

The sweet and esculent tuberous roots of the Earth-nut, containing a considerable portion of farinaceous matter, are very nutritive, and are much sought after by pigs; and it is an amusement for children to trace them to their deep situation in the ground by the slender stem which guides them to it, and in times when there is a scarcity of provisions they have been sought after as human food; when dried, they are readily powdered into flour, which has much the taste and appearance of arrow root, for which it might be substituted.

GENUS LVIII. PIMPIN'ELLA.—LINN. *Burnet Saxifrage*.

GEN. CHAR. *Calyx* margin obsolete. *Petals* obovate, notched, with an inflexed point. *Fruit* ovate, laterally compressed, crowned by the convex disk and long slender style. *Carpels* with five filiform *ridges*, the lateral ones forming the margins. *Channels* with many *vittæ*. *Albumen* roundish at the back, plain in front. *Involucre* wanting. *Flowers* white.—Name altered, according to Linnaeus, from *Bipinnula*, twice pinnated.



429

Carum verticillatum.



430

Bunium flexuosum.



431

Pimpinella saxifraga.



432

Pimpinella magna.



433

Cicuta virosa.



434

Sium latifolium.

1. *P. Saxifraga*, Linn. (Fig. 431.) common *Burnet Saxifrage*. Leaves pinnate; leaflets of the radical ones roundish ovate, lobed, toothed or serrated, those of the upper ones in linear segments; stem round, slender, striated, nearly naked above; fruit ovate smooth.

English Botany, t. 407.—English Flora, vol. ii. p. 89.—Hooker, British Flora, vol. ii. p. 130.—Lindley, Synopsis, p. 121.

β. dissectifolia. Leaflets of all the leaves cut into linear segments.

P. Saxifraga dissectifolia.—Wallr. *P. hircina*.—Leers.

Root tapering, somewhat woody, having a pungent aromatic smell. *Stem* erect, from a few inches to two feet high, round, slender, finely striated, smooth or clothed like the rest of the plant, with a close soft down, simple or branched, leafy below, almost naked above. *Leaves* almost all radical, on long slender channeled footstalks, dilated at the base into a broad short membranous sheath. *Leaflets* opposite, sessile, or on short footstalks, roundish oblong, or ovate, the terminal one mostly three-cleft, the margins more or less deeply cut and coarsely toothed or crenated, the upper leaves or the whole of them as in the variety *β. dissectifolia*. They are twice pinnate, and the leaflets cut into narrow linear simple or cleft decurrent segments, green above, paler and somewhat glaucous beneath, with a prominent mid-rib and branched lateral veins, and the under side is mostly thicker clothed with a softer down than the upper. *Umbels* terminal and lateral, the general of numerous slender angular somewhat unequal rays, partial of numerous short unequal ones. General and partial involucre wanting. *Flowers* white, nearly regular. *Calyx* a scarcely distinguishable obtuse somewhat waved margin. *Petals* obovate, slightly notched, with an obtuse inflexed point, about half as long as the petal. *Stamens* with long slender filaments and small round anthers. *Styles* long, slender, somewhat recurved. *Stigma* small, round, obtuse. *Disk* large, convex, fleshy crowning the fruit, which is ovate, the sides compressed. *Carpels* with five ridges, the lateral ones forming the margins, two lateral towards the back, and one forming a ridge on the back. *Channels* with numerous slender simple vittæ. *Albumen* roundish gibbous at the back, plain in front.

Habitat.—Dry places and pastures; frequent.

Perennial; flowering in July and August.

The varieties of this species are very puzzling to the young student, from the varied forms which the leaves assume. It is not unfrequent that on one plant the leaves are both with ovate leaflets more or less cut and toothed, and with leaves having the leaflets much divided into linear segments, and it is not unfrequent to find the variety *β. dissectifolia* with all the leaves cut in the same manner. The student will also frequently meet with the plant of different sizes, and with the leaflets more or less deeply cut, and also variously clothed with pubescence, owing to the greater or less humidity of the situation of

its growth. These are made by some of the Continental Botanists separate varieties; but as they are probably only varied owing to the local circumstances of their growth, we do not think it necessary.

Burnet Saxifrage was formerly placed in the *Materia Medica* of the Edinburgh Pharmacopæia. The roots, which have a hot, pungent, bitterish taste, were recommended as a stomachic, and a decoction was thought useful as a stimulating gargle in affections of the throat, and to remove freckles from the face; the root masticated for a time, is said to relieve the tooth-ache from its stimulating the salivary secretions.

2. *P. mag'na*, Linn. (Fig. 432.) *greater Burnet Saxifrage*. Leaves pinnated; leaflets ovate, serrated, somewhat cut; stem angular, furrowed, leafy; fruit oblong, ovate, smooth.

English Botany, t. 408.—English Flora, vol. ii. p. 90.—Hooker, British Flora, vol. i. p. 130.—Lindley, Synopsis, p. 121.

Root tapering, stout, somewhat woody. *Stem* erect, stout, angular, and deeply furrowed, from one and a half to three feet high, smooth and much branched above, leafy. *Leaves* a lively green, smooth above, beneath somewhat shining, strongly ribbed, and clothed more or less thickly with a short close soft pubescence, the lower leaves on long slender furrowed and channeled footstalks. *Leaflets* about four pairs, and a terminal one, the lower ones on short footstalks, the upper sessile, ovate oblong, somewhat irregularly coarsely serrated, and the lower ones variously cut and lobed, the terminal leaflet mostly three-cleft and cut irregularly; the upper leaves of the stem with short dilated sheathing footstalks, and narrow lanceolate coarsely serrated leaves. *Umbels* numerous, terminal and lateral, the *general* of numerous slender angular unequal rays, *partial* crowded with short very slender unequal angular ones. *General* and *partial involucre* wanting. *Flowers* crowded, small, white, nearly regular, sometimes rose colour. *Calyx* a very narrow scarcely distinguishable margin. *Petals* five, small, obovate, notched with an obtuse incurved point, about half as long as the petal. *Stamen* with long slender *filaments* and roundish *anthers*. *Styles* long, slender, with small globose *stigmas*, the *disk* large, flesh convex, crowning the oblong ovate *fruit*, which is smooth. *Carpels* with five slender *ridges*, the lateral ones forming the margins, the sides compressed. *Channels* with three or more simple slender *vittæ*. *Albumen* rounded at the back, flat in front.

Habitat.—Under hedges and in shady places; not unfrequent in various parts of England. Friar's Walk, near Cork; Mucross Woods, near the Abbey and Church-yard, at Youghall, Ireland.

Perennial; flowering in July and August.

This species, readily distinguished from the last, is less frequent, and is not, though possessed of similar properties, so strong.

GENUS LIX. CICUTA.—LINN. *Cowbane.*

GEN. CHAR. *Calyx* margin of five teeth, leafy. *Petals* obcordate, with an inflexed point. *Fruit* roundish, laterally compressed. *Carpels* with five nearly plain ridges, the lateral ones forming the margins. *Channels* with single *vittæ*, which are more prominent in the ripe fruit than the ridges. *Albumen* roundish. *General involucre* none, or of few segments; *partial* of numerous linear segments.—Name *Quasi cæcuta, blind*; because it destroys the sight of those who use it. *Cicuta* was a term used by the Latins for the internode or the space between two joints of a reed; or the hollow stem of any plant which was used by their shepherds for making their rural pipes, and the stem of this plant has the hollow internode. Virgil says, "*Est mihi disparibus septem conjuncta fistula.*"

1. *C. viro'sa*, Linn. (Fig. 483.) *Water Hemlock, or Cowbane.* Root with thread-like fibres; leaves tri-pinnate; leaflets lanceolate, acutely serrated, decurrent.

English Botany, t. 479.—English Flora, vol. ii. p. 62.—Hooker, British Flora, vol. i. p. 127.—Lindley, Synopsis, p. 125.

Root of numerous long branched thread-like fibres, from the large swollen base of the hollow *stem*, which is stout, round, smooth, furrowed, hollow, and divided by transverse partitions at the axis of the branches into large long cells, much branched above and leafy. *Leaves* bi- or tri-pinnate, smooth, of a bright green, on long stout hollow striated footstalks, with a long dilated sheathing base, secondary footstalks opposite, in about four pairs of the lower leaves, and a terminal one, the upper ones less numerous; tertiary footstalks very short, and bearing two or three leaflets, which are lanceolate, with deep acute irregular serratures, margins decurrent at the base, and the two or three leaflets frequently appear as one by the union of the bases, the leaflets of the upper leaves very narrow, almost linear. *Umbels* numerous, terminal and lateral, the *general* of numerous long slender angular somewhat irregular rays, *partial* of numerous crowded short irregular ones. *General involucre* wanting, or of a few narrow segments, *partial* of numerous linear spreading segments of irregular lengths. *Flowers* white, crowded, nearly regular. *Calyx* margin of five broadish spreading leafy teeth. *Petals* inversely heart-shaped, rolled inwards, having a mid-rib and an obtuse inflexed point, about half as long as the petal. *Stamens* on slender filaments, longer than the petals, with ovate *anthers* of two swollen cells, frequently purplish. *Styles* as long as the fruit, recurved. *Stigmas* small, globose. *Disk* small, somewhat conical. *Fruit* small, roundish, the sides somewhat

compressed. *Carpels* with five flattish equal ridges. *Channels* with single simple *vitta*, more prominent in the ripe fruit than the *ridges*.

Habitat.—Ditches, margins of rivers and lakes, and in low damp meadows in various parts of England, and the lowlands of Scotland; but not very frequent. Plentiful at Farnham, and other places on the banks of Lough Erne, Ireland.

Perennial; flowering in July and August.

Water Hemlock, or Cowbane, has a disagreeable fœtid odour and pungent taste, possessing poisonous qualities, even of greater energy than the common Hemlock, and producing effects similar to hydrocyanic acid. The symptoms related of those cases where the plant has accidentally been taken, are first swelling at the stomach, with vomiting, succeeded by total insensibility, finally with severe convulsions, during which there is generally locked jaw, rolling of the eyes, and distortion of the spine; death terminating the sufferings generally within half an hour after taking the plant. When the plant is unfortunately taken into the stomach, the best means appears to be to have recourse as soon as possible to an emetic, followed up with a brisk purgative of repeated doses of oil, assisted by cathartic injections.

It is a singular circumstance in the history of many plants that while so strongly poisonous to some animals, they may be eaten with impunity by others. Such we find is the case with the *Cowbane*; for when taken by most animals it is highly poisonous, but is eaten without injury by others, as by horses, sheep, and goats. It is related by Linnæus that in the moist pastures of Sweden this plant used to cause a considerable yearly loss amongst the horned cattle, until the cause was shown by him to arise from their feeding upon the Cowbane, and the means of preventing its recurrence pointed out. When full grown, Cowbane has a strong disagreeable odour, and is avoided by cattle; but when it is young, and growing luxuriantly amongst other herbage, it has a very faint smell, and is not discriminated, though almost as poisonous as the older plants. Linnæus, therefore, as a remedy against this yearly loss, pointed out to the owners of the cattle, that if they kept them out of these low pastures until the Cowbane was well grown, they might then be turned into them without fear of loss, for the instinct of the animals would prevent them from eating the plant by its disagreeable odour. They took his advice, and adopted this simple remedy; and from that time these animal losses have ceased. In some parts of Derbyshire this plant is very frequent; and we remember on one occasion conversing with a farmer who complained of having lost some of his young stock of cattle, and that he was equally unfortunate every year. We walked with him to his meadow where his cattle had been grazing, and found amongst the herbage a considerable number of young plants of the Cowbane; and remembering the circumstance above related of this plant by Linnæus, we

recommended the same plan of obviating the evil, and the careful removal of all the plants of the Cowbane from his meadows, which was followed, and produced the same happy results.

GENUS LX. BERU'LA.—Koch. *Berula*.

GEN. CHAR. *Calyx* margin of five teeth. *Petals* obcordate, with an inflexed point. *Fruit* ovate, laterally contracted. *Disk* shortly conical, with a narrow margin. *Styles* reflexed. *Carpels* with five equal filiform *ridges*, the lateral ones before the margin. *Channels* with many *vittæ*. *Albumen* roundish. *General and partial involucre* of several reflexed lanceolate or pinnate segments.

1. *B. angustifolium*, Koch. (Fig. 435.) narrow-leaved *Berula*, or *Water Parsnip*. Stem erect; leaves pinnate; leaflets unequally cut and serrated; umbels pedunculated opposite the leaves; involucre frequently pinnatifid.

Sium angustifolium.—English Botany, t. 139.—English Flora, vol. ii. p. 56.—Hooker, British Flora, vol. i. p. 130.—Lindley, Synopsis, p. 121.

Roots slender, fibrous, branched, in numerous whorls from the joints of the long creeping underground stems. Flowering *stems* erect, round, or somewhat angular, striated, smooth, much branched and leafy above, from one to two feet high. *Leaves* alternate, simply pinnate, quite smooth, footstalks striated, with a much dilated thin membranous margin sheathing the stem. *Leaflets* opposite, in about eight pairs, and a terminal three-cleft one, ovate or ovate-lanceolate, those on the lower leaves more distant, with the margins deep and irregularly cut or lobed, and unequally serrated, those of the upper leaves narrower, more crowded, finer, and more regularly serrated. *Umbels* on short footstalks opposite the leaves, the *general* of numerous unequal angular slender *rays*, and the *partial* of short mostly crowded ones. *General involucre* of about six segments, which are simply lanceolate, or cut and not unfrequently pinnated, the *partial* of about six lanceolate spreading segments, seldom cut or pinnated. *Flowers* white. *Calyx* margin of five small teeth, shortly withering after flowering, and falling away. *Petals* inversely heart-shaped, or somewhat obovate, with a mid-rib and small inflexed point. *Stamens* with long slender *filaments* and small round *anthers*. *Fruit* crowned with the conical *disk*, and the short reflexed *styles* with small dark obtuse *stigmas*, ovate, the sides contracted, smooth. *Carpels* with five equal filiform *ridges*, the lateral ones placed before the margins. *Channels* with many *vittæ*, the *vittæ* covered with a thick leathery pericarp. *Albumen* on a transverse section, roundish.

Habitat.—Ditches and rivulets; frequent in England and Ireland; but not common in Scotland.

Perennial; flowering in July and August.

GENUS LXI. SIUM.—LINN. *Water Parsnip*.

GEN. CHAR. *Calyx* margin of five teeth. *Petals* obcordate, with an inflexed point. *Fruit* laterally compressed or contracted. *Disk* flattish, with a depressed margin. *Styles* reflexed. *Carpels* with five equal obtuse filiform *ridges*, the lateral ones forming the margins. *Channels* with three superficial *vittæ*. *Albumen* rounded at the back, flat in front. *General involucre* mostly of several linear segments, *partial* of numerous ones.—Name from *cruo*, to move; from the plant being almost constantly agitated by the water: or, according to Théis, from the Celtic word *siw*, water.

1. *S. latifolium*, Linn. (Fig. 434.) *broad-leaved Water Parsnip*. Stem erect; leaves pinnated; leaflets lanceolate, equally and acutely serrated; umbels terminal; involucre of numerous linear segments.

English Botany, t. 204.—English Flora, vol. ii. p. 56.—Hooker, British Flora, vol. i. p. 130.—Lindley, Synopsis, p. 121.

Root of slender long branched fibres, from the creeping underground stem. Flowering *stems* erect, angular, smooth, deeply furrowed, from two to six feet high, smooth, hollow, branched, and leafy. *Leaves* alternate, pinnate, on long striated footstalks, with a dilated base, with membranous edges sheathing the stem, the lower ones or those under the water sometimes bi-pinnate, with the margin of the leaflets irregularly cut and serrated, the upper ones with about five pairs, and an odd one of lanceolate smooth *leaflets*, of a lively green above; beneath paler, somewhat glaucous, with a mid-rib and numerous fine netted veins, the margin fine, and acutely serrated. *Umbels* terminal, large, of numerous long angular *rays*, of nearly equal lengths, *partial* of numerous short slender nearly equal ones. *General involucre* mostly of several linear reflexed segments, sometimes one or two of them pinnated, *partial* of several lanceolate mostly unequal ones. *Flowers* white, crowded. *Calyx* of five teeth, sometimes very small. *Petals* inversely heart-shaped, or obcordate, with an inflexed small point. *Stamens* with slender *filaments*, and rather large inversely heart-shaped *anthers*, of a purplish colour. *Styles* short, reflexed, or spreading. *Stigmas* small, obtuse. *Disk* flattish, with a depressed margin, fleshy, yellowish, crowning the ovate *fruit*, with the sides much compressed or contracted, smooth. *Carpels* with five filiform obtuse palish equal *ridges*, the lateral ones forming the margins. *Channels*

with three simple superficial *vittæ*, *pericarp* of two coverings. *Albumen* rounded at the back, flat in front.

Habitat.—Ditches, rivulets, the margins of streams and watery places. Frequent in England and Ireland, but rather rare in Scotland.

Perennial ; flowering in July and August.

TRIBE 4. SESELINÆ.—Koch. *Fruit* in a transverse section, round, or roundish. *Carpels* with five filiform or winged *ridges*, the lateral ones forming the margin, which are equal or a little wider than the others. *Albumen* convex at the back, flat in front, or roundish. *Umbels* perfect.

GENUS LXII. CENANTHE.—LINN. *Water Drop-wort*.

GEN. CHAR. *Calyx* margin of five teeth. *Petals* obcordate, with an inflexed point. *Fruit* cylindrical, or oblong, crowned by the erect *styles*. *Carpels* with five somewhat convex obtuse *ridges*, the lateral ones rather wider than the others forming the margin. *Channels* with single *vittæ*. *Albumen* convex, or roundish. *General involucre* various, *partial* of numerous segments.—Named from *οἶν*, a *vine* ; and *ανθος*, a *flower* ; alluding to the vinous smell of the blossoms.

1. *C. fistu'losa*, Linn. (Fig. 436.) common *Water Drop-wort*. Root with runners ; stem cylindrical, hollow ; upper leaves pinnate, with hollow petioles ; leaflets linear, simple, or trifid ; the first umbels of three rays, fertile, the remainder of from three to seven, abortive.

English Botany, t. 363.—English Flora, vol. ii. p. 68.—Hooker, British Flora, vol. i. p. 131.—Lindley, Synopsis, p. 119.

Root fasciculated with long branched whorls of fibres, putting out underground stems, by which the plant spreads and propagates itself. *Stem* erect, bent at the base, from two to three feet high, round, smooth, hollow, striated, branched, of a glaucous green, frequently swelled in the upper part of the spaces between the joints, as if inflated. *Leaves* alternate, dilated and sheathing at the base of the long hollow footstalks, quite smooth, pinnate, with narrow linear simple or cleft segments, the root leaves bi- or tri-pinnate, with broader segments than those of the stem, which are simply pinnate, distant, and very small, with a few leaflets at the top of the footstalks only. *Umbels* lateral and terminal, various, the lower ones only are fertile, and of two or three *rays*, stout, short ; the upper ones of about five slender *rays*, bearing flowers with stamens only ; *partial* umbels of the fertile flowers with short crowded *rays*, those of the barren longer and more slender. *General involucre* almost always wanting, sometimes the barren umbels

have a few narrow linear segments, *partial involucre* either wanting or of a number of linear lanceolate segments. *Flowers* white or pinkish, irregular, the outer ones barren, bearing only the rudiments of styles, having also narrower longer more pungent segments to the calyx. *Calyx* of five nearly equal narrow lanceolate segments. *Petals* inversely heart-shaped, or obovate, notched, with a small inflexed point, unequal, especially the outer ones. *Stamens* on long slender *filaments*, with small purplish *anthers*. *Styles* long, with small obtuse *stigmas*. *Disk* small, conical, crowning the somewhat pear-shaped *fruit*, which are crowded together with a roundish rough looking head. *Carpels* with five *ridges*, the two lateral ones forming the margins rather wider than the rest, which are pale and obtuse. *Albumen* on a transverse section, convex, or roundish.

Habitat.—Ditches, rivulets, and watery places; frequent.

Perennial; flowering in July and August.

2. *Ce. pimpinel'loides*, Linn. (Fig. 437.) *Parsley Water Drop-wort*. Root with fleshy tubercles, mixed with fibres; leaves tri-pinnate, the radical ones wedge-shaped and cut, the upper ones long, linear, undivided; general involucre of several linear segments.

English Botany, t. 347.—English Flora, vol. ii. p. 69.—Hooker, British Flora, vol. i. p. 131.—Lindley, Synopsis, p. 119.

Root with several fleshy tapering tubercles, intermixed with branched filiform fibres. *Stem* erect, round, smooth, striated, from one to three feet high, slightly branched and leafy. *Leaves* smooth, bi-pinnate, alternate, on long striated footstalks, dilated at the base and sheathing, the root leaves with wedge-shaped cut leaflets, mostly trifid, the upper ones are long, linear, simple, while the intermediate ones are ovate oblong, and sometimes with a crenated margin. *Umbels* lateral and terminal, the *general* of numerous angular striated equal *rays*, the *partial* of numerous crowded short somewhat unequal ones. *General involucre* of several narrow linear unequal spreading segments, and the *partial* ones generally more numerous than these. *Flowers* white or pinkish, somewhat irregular. *Calyx* of five nearly equal lanceolate teeth. *Petals* five, unequal, especially on the outer flowers, inversely heart-shaped, or ovate and notched with a small inflexed point. *Stamens* with long slender *filaments* and small roundish *anthers*. *Styles* at first short, becoming longer, straight, rigid, with an obtuse small *stigma* and conical base. *Fruit* crowded into roundish heads, cylindrical, narrower at the base, and somewhat contracted beneath the calyx. *Carpels* smooth, with five prominent obtuse *ridges*, the lateral ones forming the margins somewhat wider than the others. *Channels* with single rather large *vittæ*. *Albumen* roundish, somewhat flat in front.

Habitat.—Salt marshes not unfrequent, and sometimes in wet meadows.



435

Berula angustifolium.



436

Oenanthe fistulosa.



437

Oenanthe pimpinelloides.



438

Oenanthe peucedanifolia.



439

Oenanthe crocata.



440

Oenanthe phellandrium.

Perennial; flowering in July.

3. *Æ. peucedaniifolia*, Poll. (Fig. 438.) *Sulphur-weed Water Drop-wort*. Root with fleshy sessile tubercles, mixed with branched fibres; radical leaves bi-pinnate, the upper pinnate, all with narrow linear leaflets; general involucre wanting.

English Botany, t. 348.—English Flora, vol. ii. p. 70.—Hooker, British Flora, vol. i. p. 131.—Lindley, Synopsis, p. 120.

Root with several fleshy sessile elliptical tubers, intermixed with long slender branched fibres. *Stem* erect, smooth, striated, or angular, branched and leafy, from one to three feet high. *Leaves* smooth, alternate, on long striated footstalks, with a sheathing dilated base, the root leaves bi-pinnate, with linear leaflets, the upper ones simply pinnate, with longer narrower leaflets, acute, and with a slender mid-rib. *Umbels* lateral and terminal, of about eight angular unequal rays, the *partial* of numerous short irregular ones. *General involucre* wanting, or of two or three short narrow linear segments, the *partial* of numerous narrow irregular lanceolate ones. *Flowers* numerous, crowded, white or pinkish, the outer ones barren. *Calyx* of five short lanceolate irregular teeth, especially on the outer flowers. *Petals* five, unequal, especially on the outer flowers, inversely heart-shaped, the outer ones largest, with the sides of the base curved inwards, and forming a kind of canal. *Stamens* with long slender filaments and small roundish purplish anthers. *Fruit* when ripe crowded into small roundish heads, crowned with the elongated rigid styles and small conical base, oblong, contracted at the base and slightly beneath the calyx, *Carpels* with five prominent obtuse ridges, the lateral ones slightly broader than the others, and forming the margin. *Channels* with single rather large vitta. *Albumen* roundish, somewhat flat in front.

Habitat.—Fresh water, ditches and marshes. Oxfordshire, Bedfordshire, Suffolk, Sussex.—*Mr. Borrer*. Lincolnshire.—*R. D.*

Perennial; flowering in June and July.

The tubers of this and the above species, *Æ. pimpinelloides*, contain a farinaceous matter, with a pleasant nutty flavour, and in some parts of the Continent they are cultivated and much esteemed; as a vegetable; but though mild and wholesome when cultivated, they are in the wild state dangerous, and cannot be used with impunity. This is another example of the advantages derived from careful cultivation, in rendering that which is unwholesome and deleterious in the wild state, bland, and nutritious, and subservient to our wants.

The two species, *Æ. pimpinelloides* and *peucedaniifolia*, are nearly allied to each other; the principal difference appears to be in the leaves and the shape of the fruit, to which characters the student must give much attention in distinguishing the species of this order.

4. *C. cro'cata*, Linn. (Fig. 439.) *Hemlock Water Drop-wort*. Root with many fleshy tubers; leaves bi- or tri-pinnate; leaflets ovate, wedge-shaped, cut or serrated, those of the upper leaves narrower; general involucre of a few segments, or sometimes wanting.

English Botany, t. 2313.—English Flora, vol. ii. p. 70.—Hooker, British Flora, vol. i. p. 131.—Lindley, Synopsis, p. 120.

Root with numerous fleshy elliptical tubers, mixed with branched fibres. *Stem* erect, large, stout, smooth, furrowed, hollow, much branched and leafy, from three to five feet high. *Leaves* alternate, large, smooth, dark green, on short furrowed footstalks, with a broadly dilated sheathing base, bi- or tri-pinnate, leaflets all wedge-shaped, or ovate wedge-shaped, opposite, more or less deeply cut and serrated, with numerous branched veins on the under side, which is rather paler than the upper, the leaflets of the upper leaves narrower. *Umbels* terminal and lateral, the *general* of numerous stout angular nearly equal rays, the *partial* of numerous short unequal crowded ones, the outer longest. *General involucre* either wanting, or of a few linear segments, *partial* of numerous linear unequal ones. *Flowers* white, crowded, irregular. *Calyx* of five short lanceolate teeth, somewhat irregular. *Petals* obcordate, or obovate, notched with an inflexed point, the outer ones largest. *Stamens* with long slender filaments and small roundish purple anthers. *Styles* long, straight, increasing after flowering. *Stigma* small, obtuse. *Disk* small, somewhat conical. *Fruit* elliptical, cylindrical, narrower at the lower part, smooth. *Carpels* with five obtuse pale ridges, the lateral ones rather broader than the others forming the margin. *Channels* with rather large single *vittæ*. *Albumen* roundish, somewhat flattened in front.

Habitat.—Ditches, river sides, and watery places; frequent.

Perennial; flowering in July.

Hemlock Water Drop-wort is one of our most poisonous umbellate plants, and has caused many fatal disasters, by being eaten in mistake instead of Water Parnsip and other plants. The fleshy roots have not an unpleasant taste, but are most deleterious. It is related by Mr. Howel, surgeon, at Haverfordwest, that "eleven French prisoners had the liberty of walking in and about the town of Pembroke. Three of them being in the fields a little before noon, dug up a large quantity of this plant, which they took to be wild Celery, to eat with their bread and butter for dinner. After washing it, they all three ate, or rather tasted of the roots. As they were entering the town, without any previous notice of the sickness at the stomach, or disorder in the head, one of them was seized with convulsions; the other two ran home, and sent a surgeon to him. The surgeon endeavoured first to bleed, and then to vomit him; but those endeavours were fruitless, and he died presently. Ignorant of the cause of their comrade's death, and of their own danger, they gave of these roots to the other eight prisoners,

who ate of them with their dinner. A few minutes afterwards, the remaining two who gathered the plants were seized in the same manner as the first, of which one died; the other was bled, and a vomit with great difficulty forced down, on account of his jaws being, as it were, locked together. This operated, and he recovered; but was some time affected with dizziness in his head, though not sick, or the least disordered in the stomach." Numerous cases are on record of the poisonous effects of this plant, and accidents are of frequent occurrence in its being mistaken for other plants. The symptoms which it generally produces are heat in the throat and stomach, delirium, followed by stupor, and, more or less general convulsions.

It appears to contain the most energetic poison of all our umbelliferous plants, producing the violent symptoms above stated almost immediately after being taken, and terminating the existence of the unfortunate individuals sometimes within an hour; but it is seldom they live more than four hours, unless some remedial means have been taken, by producing immediate sickness. Frequently bleeding is necessary, and drinking large quantities of warm diluents, followed up with some active aperient medicine.

The violent action of this plant upon the system has not, however, prevented its being used medicinally in the treatment of obstinate affections of the skin, in which it is said to have been found serviceable. The juice is of a yellow colour, and its odour resembles in some degree that of the vine blossom. It was taken in the dose of a table spoonful, in a case related by Dr. Bulteny, affecting the head in two hours after, in a very extraordinary manner, followed with violent sickness and vomiting, succeeded by cold sweats and rigors. These severe symptoms appears not, however, to have deterred the patient from continuing the medicine, but in smaller doses, until it effected a cure. The roots have also been used in the form of poultices to felons, whitlows, and foul ulcers; and it is said to be sometimes used as a bait to poison rats and moles.

The noxious effects of this plant do not appear limited to the human subject, but are equally poisonous to some animals, while others eat it with impunity.

This species is nearly allied to the *C. apiifolia*, of Brotero, differing, according to Sir W. H. Hooker, only in the colour of the secretions in the plant; but these secretions are variable, owing to the season and situation of growth of the plant. *C. apiifolia* is said to grow about Plymouth. The distinctive characters of the two plants would be best investigated in their native situation, and we hope some one will examine them more minutely.

5. *C. Phellan'drium*, Spreng. (Fig. 440.) *fine leaved Water Dropwort*. Root fusiform; stem much branched; leaves bi-tripinnate; leaflets ovate, wedge-shaped, cut, and spreading the submerged ones,

much divided; umbels opposite the leaves; general involucre wanting, or of few segments; fruit ovate, oblong.

English Flora, vol. ii. p. 71.—Hooker, British Flora, vol. i. p. 132.—Lindley, Synopsis, p. 119.—*Phellandrum aquaticum*.—English Botany, t. 684.

Root spindle-shaped, fleshy, with many whorled branched filiform fibres. *Stem* from two to three feet high, hollow, very thick at the base, very much branched above, spreading in a divaricating manner, smooth, striated, leafy. *Leaves* alternate, spreading, bi- or tri-pinnate, smooth, of a dark shining green, footstalks rather slender, striated, dilated at the base, and embracing the stem, leaflets opposite, somewhat decurrent at the base, ovate oblong, with a wedge-shaped base, deeply cut into acute narrow segments. *Umbels* opposite the leaves, on short somewhat tumid stalks, the *general* of about twelve unequal striated *rays*, the *partial* of numerous short irregular ones. *General involucre* wanting, or of a few small segments, *partial* of numerous unequal narrow ones. *Flowers* numerous, white or pinkish, the outer ones largest, mostly all fertile. *Calyx* limb of five spreading narrow lanceolate segments. *Petals* unequal, inversely heart-shaped, with an inflexed point. *Stamens* on long slender *filaments*. *Anthers* ovate, mostly purplish. *Styles* long, slender, straight. *Stigma* small, globose. *Disk* small, conical, crowning the *fruit*, which is ovate oblong, smooth, the sides compressed. *Carpels* with five broad obtuse *ridges*, the lateral ones forming the margins wider than the others. *Channels* narrow, with small single *vittæ*, containing a strong disagreeable secretion. *Albumen* roundish, oval.

Habitat.—Rivers and drains; not unfrequent.

Perennial; flowering in June and July.

The root is sometimes found to put out creeping runners when the plant is growing on the banks of running streams, and the leaves which are under the surface of the water become much divided into almost hair-like segments. Varieties are sometimes found growing in the dried up bed of ponds with short very thick stems, and much divided branches entangled together, very bushy, but not otherwise different.

GENUS LXIII. ÆTHUSA.—LINN. *Fool's Parsley*.

GEN. CHAR. *Calyx* margin obsolete. *Petals* obcordate, notched with an inflexed point. *Fruit* roundish, ovate. *Carpels* with five elevated acutely carinated *ridges*, of which the lateral ones are rather wider than the others, and surmounted by a somewhat winged keel. *Channels* with single *vittæ*. *Albumen* convex or



441 *Ethusa cynapium*



442 *Foeniculum vulgare*.



443 *Seseli libanotis*.



444 *Ligusticum scoticum*.



445 *Silaus pratensis*.



446 *Meum athamaticum*.

roundish. *General involucre* various, *partial* of three pendent segments.—Name from *αἰδω*, to burn; on account of its acrid quality.

1. *Æ. Cyna'pium*, Linn. (Fig. 441.) *common Fool's Parsley, or lesser Hemlock*. Leaves uniform; leaflets wedge-shaped, decurrent, with lanceolate segments; partial involucre of three segments, longer than the rays.

English Botany, t. 1192.—English Flora, vol. ii. p. 64.—Hooker, British Flora, vol. i. p. 132.—Lindley, Synopsis, p. 119.

Root tapering, and with long slender fibres. *Stem* erect, from twelve to eighteen inches high, erect, round, smooth, striated, branched above and leafy, frequently purplish. *Leaves* alternate, on short footstalks, much dilated at the base, with a pale thin membranous edge, two or three times pinnate, the leaflets ovate lanceolate, variously cut and serrated in narrow segments, quite smooth, of a dark green, somewhat paler beneath and finely veined, slightly decurrent at the base. *Umbels* terminal and lateral, the *general* of numerous striated rays of unequal lengths, spreading, nearly flat, *partial* of numerous short ones. *General involucre* none, *partial* of three narrow long linear segments, hanging pendent on the outer side of the umbel. *Flowers* numerous, white. *Calyx* with a narrow obsolete margin. *Petals* five, irregular, inversely heart-shaped, with a small inflexed point between the lobes at the end. *Stamens* with longish slender filaments, bearing small whitish heart-shaped anthers. *Styles* short, spreading, with small obtuse stigmas. *Fruit* roundish, ovate, small, pale, greenish brown. *Carpels* with five thick, elevated, acutely keeled ridges, the lateral ones forming the margins rather wider than the others, and with the keel somewhat winged. *Channels* narrow, with single slender vittæ. *Albumen* convex at the back, plain or concave in front.

Habitat.—Fields, waste places, and gardens.

Annual; flowering in July and August.

Fool's Parsley is another plant possessing deleterious properties, and is so called from its having been mistaken for the real Parsley, and in many instances having produced fatal results. It is readily distinguished from all other genera of this order, by its three long pendent segments of the partial involucre; it has, moreover, smooth shining leaves, having a very disagreeable nauseous smell when rubbed, which is the reverse with the Garden Parsley. The juice is said to contain a peculiar alkaloid, which crystallizes in rhombic prisms, and is soluble in water and alcohol, but not in ether. The deleterious properties are said to reside in this salt, which has been named *Cynapia*.

The symptoms which are said to be produced by this plant when taken into the stomach are, nausea, vomiting, head-ache, giddiness, somnolency, burning heat in the mouth, throat, and stomach, diffi-

culty in swallowing, and numbness in the limbs. Sometimes there are spasmodic pains and swelling in the stomach, lividity of the skin, and difficulty in breathing.

GENUS LXIV. FÆNI'CULUM.—HOFFM. *Fennel*.

GEN. CHAR. *Calyx* margin obtuse, obsolete. *Petals* roundish, entire, rolled inwards with a squarish incurved point. *Fruit* nearly round, on a transverse section. *Carpels* with five obtuse prominent carinated ridges. *Channels* with single *vittæ*. *Albumen* half round. *General* and *partial involucre* wanting.—Name from *fœnum*, hay; its smell being something like that of hay.

1. *F. vul'gare*, Gærtn. (Fig. 442.) common *Fennel*. Stem round; leaves bi-ternate; leaflets cut into long, linear, filiform segments.

Hooker, British Flora, vol. i. p. 132.—Lindley, Synopsis, p. 119.—*Anethum Fœniculum*, Linn.—English Botany, t. 1208.—*Meum Fœniculum*, Spreng.—English Flora, vol. ii. p. 85.

Root tapering. The whole plant of a deep glaucous green, smooth. *Stem* erect, from three to four feet high, round, solid, striated, much branched and leafy. *Leaves* alternate, very much divided, with long narrow linear awl-shaped segments, more or less drooping, the foot-stalk much dilated and sheathing at the base. *Umbels* lateral and terminal, the *general* of numerous unequal striated spreading rays, the *partial* of numerous short unequal ones, bearing crowded yellow flowers. *Involucre* both general and partial wanting. *Calyx* an obtuse obsolete margin. *Petals* roundish, rolled inwards, somewhat notched at the top from the small squareish inflexed point. *Stamens* on awl-shaped filaments, with ovate yellow anthers. *Styles* short, with a flattish fleshy glutinous disk. *Stigmas* small, obtuse. *Fruit* oblong, nearly round, on a transverse section. *Carpels* with five prominent obtusely keeled ridges. *Channels* with slender single *vittæ*. *Albumen* half round.

Habitat.—Plentiful on the chalky cliffs of England, and the banks of rivers near the sea in Norfolk and Suffolk; in the crevices of the rock of Nottingham Castle; and not unfrequent in the neighbourhood of towns and villages, where it has probably escaped from gardens.

Perennial; flowering in July and August.

The boiled leaves of the Fennel is in many parts of the country used, when finely minced and mixed with melted butter, as a sauce to salmon and mackarel; and the warm aromatic seeds are made into tea, and used as a carminative for children, and sometimes as a substitute for caraway seeds.

GENUS LXV. SE'SELI.—LINN. *Meadow Saxifrage.*

GEN. CHAR. *Calyx* margin of five teeth. *Petals* obcordate, with an inflexed point, or nearly entire. *Fruit* ovate or oblong, roundish, on a transverse section, crowned with the reflexed *styles*. *Carpels* with five prominent or elevated filiform *ridges*, the lateral ones mostly rather wider than the others, and forming the margin. *Channels* with single *vittæ*, rarely with two or three. *Albumen* half round. *General involucre* various, *partial* of numerous segments.—Name from *σεσέλ*, *Seseli*; originally applied to some plants of this kind.

1. *S. Libanotis*, Koch. (Fig. 443.) *Mountain Meadow Saxifrage.* Stem angular, furrowed; leaves bi-pinnatifid or tri-pinnatifid; leaflets cut into lanceolate very acute mucronated segments; general involucre of many narrow segments.

Hooker, British Flora, vol. i. p. 132.—Lindley, Synopsis, p. 119.—*Athamanta Libanotis*, Linn.—English Botany, t. 138.—English Flora, vol. ii. p. 88.—*Libanotis vulgaris*, De Cand.

Root tapering, crowned with the withered bases of the old leaves. *Stem* erect, from one to three feet high, angular, smooth, furrowed, and striated, more or less solid within, branched and leafy, the *leaves* most numerous below, alternate, sometimes opposite above, the lower ones on longish footstalks, the upper with short, and all with dilated bases, with membranous margins embracing or sheathing the stem, the *lower leaves* frequently tri-pinnated, with the leaflets broadly wedge-shaped, cut into lanceolate very acute segments, tipped with a bristle point, the lower leaflets on short footstalks, the upper sessile, and frequently united at the base, the *upper leaves* much smaller than the lower, bi- rarely tri-pinnated, the leaflets deeply cut into lanceolate segments, all of them are veiny beneath, and paler than above, frequently somewhat glaucous. *Umbels* lateral and terminal, hemispherical, the *general* of numerous angular more or less hairy *rays*, the *partial* of numerous crowded short ones. *General involucre* of numerous narrow linear hairy reflexed segments, *partial* of numerous hairy linear erect ones. *Flowers* numerous, crowded, white or pinkish. *Calyx* of five narrow awl-shaped elongated hairy teeth, which soon fall away. *Petals* inversely heart-shaped, with a strong mid-rib and two narrow lateral ones, and inflexed point. *Filaments* awl-shaped, with ovate *anthers*. *Styles* short. *Stigmas* small, obtuse. *Disk* fleshy, somewhat convex, becoming purplish after flowering. *Fruit* ovate, hairy, roundish, on a transverse section. *Carpels* with five elevated *ridges*, the lateral ones somewhat wider than the others, and forming the margin. *Channels* hairy, with single *vittæ*. *Albumen* half round.

Habitat.—Chalky pastures; very rare. Gogmagog hill, Cambridgeshire; between St. Albans and Stony Stratford.—*Hudson*.

Perennial; flowering in August.

The whole plant has a bitter pungent taste, but is not applied to any particular purpose. It is found of very variable sizes, and with the leaves more or less deeply cut and divided. A variety is mentioned by De Candolle not more than a foot high, with the stem clothed with hair, and small and more divided.

GENUS LXVI. LIG'USTICUM.—LINN. *Lovage*.

GEN. CHAR. *Calyx* margin of five teeth, or obsolete. *Petals* obovate, notched, with an inflexed point and very short claw. *Fruit* roundish, or the sides slightly compressed. *Carpels* with five sharp equal winged *ridges*, the lateral ones forming the margins. *Channels* with many *vittæ*. *Albumen* half round. *General involucre* various, *partial* of many segments.—Named from *Liguria*, in Italy, the native country of the old *Ligusticum Levisticum*.

1. *L. Sco'ticum*, Linn. (Fig. 444.) *Scottish Lovage*. Stem round, striated, slightly branched; leaves twice ternate; leaflets subrhomboid toothed, smooth; general involucre of about six linear segments.

English Botany, t. 1207.—English Flora, vol. ii. p. 82.—Hooker, British Flora, vol. i. p. 133.—Lindley, Synopsis, p. 118.

Root tapering. *Stem* round, smooth, finely striated, slightly branched above, solid. *Leaves* mostly radical, alternate, large, on footstalks, with a dilated base, with purplish membranous edges somewhat sheathing the stem, thrice ternate, *leaflets* large, somewhat fleshy, of darkish green, smooth, not glossy, of a somewhat rhomboid shape, cut deep and somewhat irregularly serrated or toothed, finely netted with veins on the under side, the terminal leaflet mostly three cleft, and sometimes the lateral ones also. *Umbels* terminal, large, the *general* of numerous nearly equal angular *rays*, the *partial* also numerous, angular, as long as the fruit. *General involucre* of about six narrow linear ribbed spreading segments, the *partial* of numerous linear ones. *Flowers* numerous, white or greenish, sometimes pink. *Calyx* margin of five lanceolate teeth. *Petals* equal, obovate, notched with a small inflexed point, narrowed at the base into a short claw, and slightly rolled inwards. *Stamens* on slender incurved *filaments*, with ovate reddish *anthers*. *Styles* short. *Stigmas* small, obtuse. *Disk* fleshy, convex. *Fruit* large, elliptical, roundish on a transverse section, or the sides slightly compressed. *Carpels* with five equal sharp winged *ridges*. *Channels* smooth, with about six slender simple *vittæ*. *Albumen* half round.

Habitat.—Rocky sea coasts; not unfrequent in the North of England and Scotland.

Perennial; flowering in July.

The root, as well as the whole plant, has an acrid aromatic flavour, with a somewhat nauseous taste. In the island of Skye it is called *Shunis*, and is said to be eaten both in a crude and boiled state; but though probably wholesome, it is not palatable to most strangers.

GENUS LXVII. SILA'US.—BESSER. *Pepper Saxifrage*.

GEN. CHAR. *Calyx* margin obsolete. *Petals* obovate, oblong, entire, or somewhat notched with an inflexed point, at the base either sessile or with an appendage. *Fruit* roundish. *Carpels* with five sharp equal somewhat winged *ridges*, the lateral ones forming the margins. *Channels* with many *vittæ*. *Albumen* nearly round. *General involucre* of few segments, or wanting, *partial* numerous.—Name of doubtful origin.

1. *S. pra'tensis*, Besser. (Fig. 445.) *Meadow Pepper Saxifrage*. Stem angular; leaves tri-pinnate; leaflets entire, linear, lanceolate, with a bristle point, or bi-partite, the terminal one tri-partite; general involucre of one or two segments.

Hooker, British Flora, vol. i. p. 133.—Lindley, Synopsis, p. 118.—*Peucedanum Silaus*.—English Botany, t. 2142.—*Cnidium Silaus*.—English Flora, vol. ii. p. 91.

Root tapering, fleshy, crowned by the withered remains of the old leaves. *Stem* erect, branched, frequently from the base, angular, somewhat furrowed and striated, smooth, purplish, especially near the joints and lower part, solid, from one to two feet high. *Leaves* mostly radical, on longish striated footstalks, dilated at the base, the lower ones three or four times pinnated, paler on the under side, the mid-rib and somewhat obtuse margin rough, with minute hairs, leaflets opposite, simple, linear, lanceolate, entire, with a fine bristle point, or once or twice deeply cleft, separate at the base, or united, the upper leaves much smaller than the lower. *Umbels* terminal and lateral, the *general* of about eight irregular angular *rays*, the *partial* much more numerous. *General involucre* of one or two linear segments, sometimes wanting, *partial* of numerous narrow linear ones. *Flowers* numerous, white, or pale yellow. *Calyx* an obsolete margin. *Petals* oblong, slightly notched, rolled inwards with an obtuse inflexed point, tapering at the base into a short claw, and with a mid-rib and two slender lateral ones. *Stamens* with long slender filaments and rather large ovate *anthers*. *Styles* straight, spreading. *Stigmas* obtuse.

Disk large, flattish, purple. *Fruit* rather large, elliptical, roundish on a transverse section, the sides somewhat compressed. *Carpels* with five sharp winged *ridges*, the lateral ones forming the margins slightly wider than the others. *Channels* smooth, with numerous simple slender *vittæ*. *Albumen* half round, somewhat waved at the back.

Habitat.—Pastures and meadows, not unfrequent in England. Near Oxenford Castle and Kelso, Scotland. Rare in Ireland; by the side of the Foyle river, county of Derry.—*Mr. D. Moore*.

Perennial; flowering in July.

The whole plant when bruised gives an unpleasant foetid smell, and does not appear to be generally eaten by cattle. It is nearly allied in generic character to *Ligusticum*, but is readily distinguished by the obsolete calyx and the shape of the petals.

GENUS LXVIII. ME'UM.—TOURNEF. *Spiguel*.

GEN. CHAR. *Calyx* margin obsolete. *Petals* entire, elliptical, acute at each end. *Fruit* nearly round. *Carpels* with five equal somewhat winged *ridges*, the lateral ones forming the margins. *Channels* with many *vittæ*. *Albumen* about half round. *General involucre* of few segments, or wanting, *partial* of numerous ones. —Name, according to Minshew, from *μεῖον*, less; from its diminutive size.

I. *M. athaman'ticum*, Jacq. (Fig. 446.) *Spiguel*, *Meu*, or *Bald-money*. Leaves bi-pinnate; leaflets opposite, numerous divided into bristle-like segments, with an acute point.

English Botany, t. 2249.—English Flora, vol. ii. p. 84.—Hooker, British Flora, vol. i. p. 133.—Lindley, Synopsis, p. 118.—*Athamanta Meum*, Linn.—*Ligusticum Meum*, Crantz.

Root tapering, fleshy, or somewhat woody, surrounded at the top with the fibrous remains of the leaves of former years. *Stem* erect, from one to eighteen inches high, round, smooth, striated, slightly branched above, and almost naked. *Leaves* mostly radical, of a dark green, on long purplish striated footstalks, with a dilated sheathing membranous base, doubly pinnated with crowded opposite leaflets, divided to the base into numerous hair-like segments, with an acute point, and from the segments spreading the leaflets appear whorled. *Umbels* terminal and lateral, the *general* of numerous unequal angular rays, the *partial* of more numerous short crowded ones. *General involucre* of a few lanceolate segments, or mostly wanting, *partial* of numerous narrow linear ones. *Flowers* numerous, crowded, yellowish, the central ones seldom perfect. *Calyx* margin

obsolete. *Petals* elliptical, with an acute point and base, and a slender mid-rib. *Fruit* rather large, elliptical, somewhat curved, roundish, on a transverse section, the side slightly compressed. *Carpels* with five slightly winged equal *ridges*, the lateral ones forming the margins scarcely wider than the others. *Channels* smooth, with numerous slender simple *vittæ*. *Albumen* half round, on a transverse section.

Habitat.—Dry alpine pastures; not unfrequent in the North of England and Scotland, especially the Highlands.

Perennial; flowering in June and July.

This plant, called *Bald* or *Bald-money*, is, Sir W. J. Hooker observes, a corruption of *Balder*, the *Apollo* of the northern nations, to whom this plant was dedicated. The whole plant has a powerful aromatic smell, with a warm or somewhat acrid bitterish taste, and has been recommended as a carminative and stomachic in the form of tea. The peculiar flavour of the plant is said to be communicated to the milk and butter of the cattle feeding upon it, which, according to the taste of some persons, is very agreeable.

GENUS LXIX. CRITH'MUM.—LINN. *Samphire*.

GEN. CHAR. *Calyx* margin obsolete. *Petals* roundish, entire, rolled inwards with an obovate point. *Fruit* roundish on a transverse section. *Carpels* with five elevated sharp somewhat winged *ridges*, the lateral ones forming the margins a little wider than the others. *Albumen* free in the pericarp, with numerous *vittæ*. *General* and *partial involucre* of numerous segments.—Name from *κρίνω*, to secrete; so named from its supposed power in promoting the secretion of urine, &c.

1. *C. mariti'mum*, Linn. (Fig. 447.) *Sea Samphire*. Leaflets lanceolate, fleshy; segments of the involucre ovate.

English Botany, t. 819.—English Flora, vol. ii. p. 73.—Hooker, British Flora, vol. i. p. 133.—Lindley, Synopsis, p. 118.

Root long, branched, and tortuous, extending for a considerable distance among stones and the fissures of rocks. The whole plant smooth, glaucous, fleshy. *Stem* erect, or ascending, from six to twelve inches high, round, smooth, branched, and leafy. *Leaves* twice or thrice ternate, on roundish footstalks, dilated into a sheathing base, leaflets lanceolate, acute, tapering at the base, about an inch long. *Umbels* lateral and terminal, *general* of numerous somewhat unequal rays, *partial* of numerous short ones. *General involucre* of numerous ovate lanceolate spreading segments, as well as the *partial*. *Flowers* nu-

merous, crowded, white. *Calyx* margin obsolete. *Petals* rolled inwards, roundish, entire, with an obovate incurved point. *Stamens* with slender filaments and yellow *anthers*. *Styles* very short. *Stigmas* obtuse. *Disk* large, slightly convex, white, fleshy, becoming more tumid, crowning the elliptic *fruit*, which is almost round, on a transverse section. *Carpels* with five raised sharp slightly winged *ridges*, the two marginal ones scarcely wider than the others. *Albumen* nearly half round, forming a loose kernel, with numerous *vittæ*, surrounded by a loose covering.

Habitat.—Rocks by the sea side; frequent in England and Ireland; rare in Scotland, on the coast of Galloway, and at Aberlady, Haddingtonshire.

Perennial; flowering in August.

Samphire has a warm aromatic flavour, and is used by the country people in some parts of the country as a pot herb, and mixed with salads; but it is much more frequently used when pickled, for which purpose it is sold in the markets, and is much esteemed, making a warm agreeable aromatic and wholesome condiment, far superior to the *Salicornia herbacea*, (page 2), although some persons prefer it to the Samphire, and is sold in the market for the same purpose.

TRIBE 5. ANGELICEÆ.—Koch. *Fruit* compressed at the back, with dilated winged margins, which (on account of the commissure being almost central) is double. *Carpels* with five primary *ridges*, winged, or the three dorsal ones are filiform, the lateral ones always winged, and almost as wide again as the others. *Albumen* plane in front, convex behind. *Umbels* perfect.

GENUS LXX. ARCHANGEL'ICA.—HOFF.

Garden Angelica.

GEN. CHAR. *Calyx* margin of five teeth. *Petals* elliptical, entire, with an incurved acuminate point. *Fruit* somewhat compressed at the back, with two wings on each side. *Carpels* with thick carinated *ridges*, the three dorsal ones elevated, the two lateral ones dilated into wings, twice as broad as the rest. *Albumen* free in the pericarp, with numerous *vittæ*. *General involucre* of a few segments, or wanting, *partial* of numerous ones.—So named from its supposed superior virtues to the following genus.

1. *A. officina'lis*, Hoffm. (Fig. 448.) *Garden Angelica*. Stem round, smooth, striated; leaves bi-pinnate; leaflets ovate, deeply serrated, the terminal one lobed.



447

Critamum maritimum.



448

Archangelica officinalis.



449

Angelica sylvestris.



450

Pastinaca sativa.



451

Heracleum sphondylium.



452

Tordylium maximum.

Lindley, Synopsis, p. 117.—*Angelica Archangelica*, Linn.—English Botany, t. 2561.—English Flora, vol. ii. p. 80.—Hooker, British Flora, vol. i. p. 134.

Root large, fleshy, branched. *Stem* erect, very stout, four or five feet high, round, striated, smooth, except near the umbels it is thickly clothed with short soft down, branched and leafy. *Leaves* alternate, bi-pinnate or tri-pinnate, large, spreading, quite smooth, leaflets ovate lanceolate, sometimes heart-shaped at the base, the apex acute, unequally serrated, occasionally cut and lobed, the terminal one always deeply lobed, footstalks much dilated at the base in a saccate manner with thin membranous sides, smooth, striated, embracing the stem. *Umbels* lateral and terminal, the *general* of large spreading numerous striated downy rays, the *partial* globose, of numerous slender unequal downy rays. *General involucre* mostly wanting, sometimes there are a few linear segments, *partial* of numerous unequal linear smooth or somewhat downy spreading segments, as long and frequently longer than the rays. *Flowers* numerous, crowded, greenish white. *Calyx* margin of five teeth. *Petals* nearly equal. *Stamens* on slender filaments, with ovate anthers. *Styles* short, spreading. *Stigmas* obtuse. *Disk* convex, fleshy. *Fruit* oblong, ovate, compressed at the back, and the sides with two wings. *Carpels* with thick elevated keeled ridges, the two lateral ones about twice as broad as the others, dilated into thin membranous wings. *Albumen* free in the pericarp, covered over with numerous vittæ.

Habitat.—Watery places; rare. Near Birmingham, Durham, and on the banks of the Thames, near Dorking.

Biennial; flowering from June to September.

It is probable this is not a native plant, but introduced from the garden, where it is cultivated for the sake of the stalks, which contain a warm aromatic flavour, with a degree of pungency; and when candied with sugar, form a pleasant sweetmeat agreeable to most persons; it is used as a carminative, and is thought to be little inferior to ginger as a grateful stimulant and stomachic. The root possesses the same properties, but in a stronger degree, and is used for the same purposes as the stem, and also in the preparation of some of the most esteemed liqueurs. It was formerly used as a medicine, and admitted into the pharmacopœias; but in Iceland, Norway, Lapland, and Siberia, it is more esteemed than with us; the natives prepare it as an article of diet, and to flavour other food. The young shoots are either eaten candied or raw, with bread and butter, and at one time it was supposed to be possessed of anti-pestilential powers, and tended greatly to lengthen the span of life, for which purpose the Laplanders and Norwegians are said to masticate it in the manner of tobacco.

GENUS LXXI. ANGEL'ICA.—LINN, *Angelica*.

GEN. CHAR. *Calyx* margin obsolete. *Petals* entire, lanceolate, acuminate, with a straight or incurved point. *Fruit* compressed at the back, with two wings on each side. *Carpels* with three dorsal filiform *ridges*, the two lateral ones dilated into broad membranous wings. *Channels* with single *vittæ*. *Albumen* roundish, adhering to the pericarp. *General involucre* scarcely any, *partial* of many segments.—Named from its supposed angelic virtues.

1. *A. sylves'tris*, Linn. (Fig. 449.) *Wild Angelica*. Leaves bipinnate; leaflets ovate, acutely serrated, terminal one entire or trifid, the lateral ones nearly sessile.

English Botany, t. 1128.—English Flora, vol. ii. p. 81.—Hooker, British Flora, vol. i. p. 134.—Lindley, Synopsis, p. 117.

Root large, of fleshy spreading branches. *Stem* erect, round, smooth, polished, sometimes finely downy at the base and extremity of the branches, a pale glaucous green, or purplish, with wide spreading branches, leafy, generally about three feet high, but sometimes we have measured plants ten feet, and stout in proportion. *Leaves* alternate, on long striated footstalks, much dilated at the base into a thin striated membranous pouch, embracing the stem, two or three times pinnated, the leaflets ovate, acutely serrated, and somewhat irregularly, the terminal leaf frequently divided into three deep lobes, and the lateral ones almost sessile, somewhat lobed at the base, of a pale glaucous green beneath, quite smooth, except the ribs being slightly hairy, finely reticulated with veins, the upper leaves very small, with very large dilated smooth or downy sheaths to the footstalks. *Umbels* numerous, terminal and lateral, large, or numerous, somewhat unequal striated downy rays, the *partial* hemispherical, of numerous short slender rays, unequal. *General involucre* mostly wanting, *partial* of numerous slender linear downy spreading segments, about as long or shorter than the rays. *Flowers* numerous, crowded, white or pinkish. *Calyx* an obsolete waved border. *Petals* nearly equal, lanceolate, entire, acuminate at the point, straight, or curved inwards, with a mid-rib. *Stamens* on long slender *filaments*, with ovate *anthers*. *Styles* long, recurved, with capitate *stigmas*, the *disk* convex, fleshy. *Fruit* rather small, ovate oblong, compressed at the back, smooth, crowned with the elongated styles. *Carpels* with three elevated filiform *ridges* at the back, and the two lateral ones dilated into broad membranous wings. *Channels* with single *vittæ*, pericarp separated from the *albumen*, which is half round.

Habitat.—River sides, drains, and damp shady places; frequent.

Perennial; flowering in July and August.

This possesses properties similar to the last, but in a very inferior degree.

TRIBE 6. PEUCEDANEÆ.—De Cand. *Fruit* much compressed at the back, with a smooth, thin, dilated, winged, flat, or convex margin. *Carpels* with five primary, filiform, sometimes very fine *ridges*, the lateral ones contiguous to part of it; secondary ridges wanting. *Albumen* flattened, or somewhat convex at the back. *Umbels* perfect.

GENUS LXXII. PASTINACA.—LINN. *Parsnip*.

GEN. CHAR. *Calyx* margin obsolete, or minutely toothed. *Petals* roundish, entire, rolled inwards with a broad obtuse inflexed point. *Fruit* flattened at the back, with a dilated flat margin. *Carpels* with five very slender filiform *ridges*, the three dorsal ones equi-distant, the lateral ones remote, near to the dilated margin. *Channels* with single *vittæ*. *Albumen* flat in front. *General* and *partial involucre* of few segments, or wanting.—Name from *pastus*, food.

1. *P. sativæ*, Linn. (Fig. 450.) *common Wild Parsnip*. Leaves pinnate; leaflets ovate oblong, cut, obtusely serrated, the lateral ones lobed at the base, the terminal one of three lobes, downy beneath.

English Botany, t. 556.—English Flora, vol. ii. p. 101.—Hooker, British Flora, vol. i. p. 135.—Lindley, Synopsis, p. 116.

Root tapering, fleshy, white, sweet and aromatic, with a degree of acrimony. *Stem* erect, about three feet high, branched, leafy, angular, and deeply furrowed, more or less rough, with hairiness. *Leaves* large, with stout striated downy footstalks, channeled above, with a broad dilated somewhat sheathing base, *leaflets* numerous, opposite, ovate oblong, obtuse, variously cut and lobed with an acutely serrated or crenated margin, nearly smooth above, beneath pale, with a strong mid-rib, and downy, sometimes the lateral leaflets are three lobed, as is always the terminal one. *Umbels* numerous, terminal and lateral. *General* of numerous unequal striated *rays*, numerous, also unequal. *General* and *partial involucre* wanting, or of one or two narrow segments. *Calyx* margin obsolete. *Petals* small, roundish, entire, with a broad small obtuse inflexed point. *Stamens* on slender *filaments*, with roundish *anthers*, of two tumid cells. *Styles* at first very short, becoming elongated and spreading. *Stigmas* small, capitate. *Disk* yellow, fleshy, convex. *Flowers* yellow. *Fruit* ovate, compressed, with a flat dilated obtuse margin round it. *Carpels* much compressed

at the back, with three very slender equi-distant *ridges* at the back, the two lateral ones remote, close to the dilated margin. *Channels* shallow, each with a single slender *vittæ* the length of the channel. *Albumen* thin, much pressed, flat in front, somewhat convex at the back.

Habitat.—Road sides, borders of fields and pastures; not unfrequent. In gravelly or sandy soil in Nottinghamshire, Leicestershire, Lincolnshire, Essex, and the South-east of England; Crosby, near Liverpool in chalky pastures; not unfrequent in Ireland.

Biennial; flowering in July.

The Parsnip is a well known garden plant, cultivated for its roots, which are large, white, and fleshy, abounding in farinaceous matter, with mucilage and sugar. They are wholesome and nutritious, but much too sweet to be agreeable to many persons. One variety, the *Coquaine*, has very large roots, and in some parts of the country is much cultivated for cattle, especially in Jersey and Guernsey, and is said to be one cause of the superiority of the milk, both in richness and flavour; and in the North of Ireland the roots are prepared and used with hops to brew a kind of beer in the place of malt. An excellent and wholesome wine is made from the parsnip root, approaching in flavour to the malmsey of Madeira and the Canaries; it is made with but little trouble or expence. The following are the directions given:—To every four of parsnip roots, cleared and quartered, put one gallon of water; boil them till they are quite tender; drain them through a sieve, but do not bruise them, as no remedy could afterwards clear the liquid; pour the liquor into a tub, and to each gallon add three pounds of loaf sugar, and half an ounce of crude tartar; when cooled to the temperature of 75 degrees, put in a little yeast; let it stand four days in a warm room, then tun it. The mixture should, if possible, be fermented in a temperature of 60 degrees. September and March are the proper months for making the wine. When the fermentation has subsided, bung down the cask and let the wine stand at least twelve months before bottling. The boiled roots, especially of the wild plants, are esteemed for their diuretic and mucilaginous properties in calcarious affections of the bladder.

GENUS LXXIII. HERA'CLEUM.—LINN. *Cow Parsnip*.

GEN. CHAR. *Calyx* margin of five teeth. *Petals* obovate, emarginate, with an inflexed point, the outer ones often radiant, bifid. *Fruit* flattened at the back with a broad plane margin. *Carpels* with very slender *ridges*, the three dorsal ones equi-distant, the two lateral ones remote, contiguous to the dilated margin. *Channels*

with single clavate *vittæ*. *Albumen* flattened. *General involucre* falling away, *partial* of numerous segments.—Named from *Hercules*, who is said to have brought this or some other allied plant into use, and was sacred to him.

1. *H. Sphondylium*, Linn. (Fig. 451.) common Cow Parsnip, or Hog Weed. Leaves rough, hairy, pinnate, or deeply pinnatifid, leaflets lobed, cut, sinuated, the terminal one somewhat palmated; fruit ovate, obtuse, notched, at length smooth.

English Botany, t. 939.—English Flora, vol. ii. p. 102.—Hooker, British Flora, vol. i. p. 135.—Lindley, Synopsis, p. 116.

β. angustifolium. Leaves more deeply cut, with narrow lobes.—

H. angustifolium. Sm. Flora. Brit. p. 307. Jacquinii Austr. vol. ii. t. 173.

Root tapering, whitish, and somewhat sweet. *Stem* erect, about four feet high, branched, leafy, angular, deeply furrowed and rough, with white spreading hairs. *Leaves* large, with striated footstalks, very much dilated into a thin membranous striated saccate sheath, more or less hairy, with three leaflets, or pinnated, rough, with hairs, pale on the under side, lobed, deeply cut or sinuated, irregularly serrated, the terminal leaflet three lobed, or sometimes cut in a palmate manner; occasionally the leaflets are all deeply cut into narrow lobes, as in the variety *β*. *Umbels* terminal and lateral, large, the *general* one of numerous striated irregular downy rays, the *partial* slender, numerous, unequal, the outer ones bearing radiant fertile flowers. *Involucre* various, the *general* of a few lanceolate membranous finely fringed segments, soon falling away, or wanting, the *partial* similar, more numerous. *Flowers* numerous, the outer ones larger than the others, radiant, white or pink. *Calyx* of five small teeth. *Petals* inversely heart-shaped, with an inflexed point, the petals of the outer flowers much larger than the others, and deeply divided. *Stamens* on long slender filaments, with ovate anthers. *Styles* short, with a conate disk. *Fruit* ovate, very thin, compressed at the back, obtuse at the extremity, and notched with a broad plane margin, at first somewhat downy, becoming smooth. *Carpels* with very slender filiform ridges, the three at the back equi-distant, the two lateral ones near the dilated margin. *Channels* very shallow, with conspicuous club-shaped *vittæ*, about half the length from the top. *Albumen* very thin, much compressed.

Habitat.—Hedges, road sides, pastures, and bushy places; frequent.

Biennial; flowering in July.

A coarse rank plant, wholesome and nutritive for cattle, and is eaten by most of them; hogs are said to be particularly fond of it, hence its name of Hog-weed. The dried hollow stems are gathered in many parts of the country, tied up in small bundles of a convenient length, dried and used for spells, &c.; and on the Continent they are made into matches, with brimstone.

GENUS LXXIV. TORDYLIUM.—LINN. *Hart-wort.*

GEN. CHAR. *Calyx* margin of five teeth. *Petals* obovate, emarginate, with an inflexed point, the outer ones radiant, bifid. *Fruit* flattened at the back, surrounded by a thickened often crenated accessory margin. *Carpels* with five very slender *ridges*, the dorsal ones equi-distant, the lateral ones remote, contiguous to the thickened margin, or sometimes covered over by it. *Channels* with one to three *vittæ*. *Albumen* flattened. *General* and *partial involucre* of numerous segments.—Name, according to Linnæus, derived from *τορνος*, a *turning lathe*; and *ελλω*, to *turn*; from the nearly orbicular seed vessels. It appears to be the *τορδυλιον* of the Greeks.

1. *T. maximum*, Linn. Fig. 452.) *Great Hart-wort*. Stem rough, with reversed hairs; leaves pinnate; leaflets obtusely crenated, the lower ones ovate, the upper lanceolate; involucre shorter than the umbel; fruit with a rough hairy disk, and scarcely notched hairy border.

English Botany, t. 1173.—English Flora, vol. ii. p. 105.—Hooker, British Flora, vol. i. p. 136.—Lindley, Synopsis, p. 116.

Root tapering. *Stem* erect, from three to four feet high, angular, furrowed, clothed with rigid hairs pointed downwards, hollow, branched and leafy, its branches slender, bearing numerous *umbels*, terminal and lateral. *Leaves* pinnate, clothed with close pressed hairs, directed towards the point of the leaf, *footstalks* longish, channeled above, the base dilated into a membranous striated sheath, *leaflets* of the lower leaves ovate, cut and obtusely serrated or crenated, those of the upper narrow lanceolate, less deeply cut and more regularly serrated, the lower pair of leaflets reflexed, the upper spreading. *Umbels* mostly numerous, of a few hairy striated more or less unequal *rays*, the *partial* of numerous short ones. *General involucre* of numerous narrow linear hairy segments, shorter than the rays, the *partial* about as long as the umbellules, sometimes longer. *Calyx* margin of five linear teeth, the two outer ones longer than the others. *Petals* obovate and notched, or obcordate, with a small inflexed point, the outer flowers radiant, with one or two outer petals larger than the others, and deeply bifid. *Flowers* white, or more or less deeply tinged, of a rose colour, small. *Stamens* on short slender *filaments*, with small roundish *anthers*. *Styles* short, with a small conical disk. *Fruit* nearly orbicular, very neat, flattened, surrounded with a thickened accessory pale border, scarcely notched, more or less clothed with hairs, as well as the disk. *Carpels* with five very slender filiform equi-distant *ridges* at the back, the two lateral ones distant from the others, close to the margin.

Channels very shallow, with from one to three slender *vittæ*. *Albumen* very flat.

Habitat.—Banks and waste ground; rare. About London, Oxford, and Eton.

Annual; flowering in June and July.

This is a larger and taller plant than the following, with more numerous and more lanceolate leaflets. Scarcely a native plant, though common on the Continent, especially in Italy.

2. *T. officinale*, Linn. (Fig. 453.) *Small Hart-wort*. Stem clothed with soft reversed hairs; leaves pinnate; leaflets crenated, cut, ovate; involucre as long as the umbel; fruit with a smooth crenated border and hairy disk, the two outer petals of the flowers of the ray each with one very large lobe.

English Botany, t. 2440.—English Flora, vol. ii. p. 104.—Hooker, British Flora, vol. i. p. 135.—*Condyllocarpus*, Hoff.—Lindley, Synopsis, p. 115.

Root small, tapering. *Stem* erect, branched, and spreading, from ten to eighteen inches high, round, furrowed, clothed with soft deflexed hairs, leafy. *Leaves* roughish, hairy, simply pinnate, *leaflets* few, ovate, roundish, variously lobed and notched, and irregularly crenated or obtusely serrated, the terminal one largest, footstalks channeled above, the base dilated into a thin striated membrane. *Umbels* lateral and terminal, the *general* of numerous unequal *rays*, the *partial* of numerous short ones. *Flowers* numerous, unequal, white, those of the disk small, and nearly equal, but those of the circumference very unequal, the two outer petals very much larger than the others, each with one very large obovate lobe, and one very small one. *Involucre* both *general* and *partial* of numerous narrow linear segments, as long as the umbels, and downy. *Calyx* of five small teeth. *Petals*, except the two outer ones of the flowers of the circumference, small, inversely heart-shaped, with a small inflexed point. *Stamens* on slender *filaments*, with small ovate *anthers*. *Styles* slender, with obtuse *stigmas*, and the *disk* convex. *Fruit* very beautiful, orbicular, with a thick pale deeply notched or crenated smooth border around the hairy disk. *Carpels* very much flattened, with five very slender filiform *ridges*, three at the back an equal distance from each other, the two lateral ones more distant, near the thickened margin. *Channels* very shallow, with three *vittæ*, each of which is separated by a furrow. *Albumen* flat.

Habitat.—Cultivated fields, near London.

Annual; flowering in June and July.

This species, which is made a separate genus of by Hoffmann, on account of the three *vittæ* in each channel being separated by a furrow, is a very doubtful native. It was formerly called *Seseli creticum*, and

was esteemed for its supposed medical virtues. The seeds are said to possess diuretic properties, but it is not now used as a medicine.

GENUS LXXV. PEUCE'DANUM.—LINN. *Hog's Fennel*.

GEN. CHAR. *Calyx* margin of five teeth, sometimes obsolete. *Petals* obovate, emarginate, or entire, with an inflexed point. *Fruit* flattened at the back with a broad thin margin. *Carpels* with five nearly equi-distant *ridges*, the three dorsal ones filiform, the lateral ones more obsolete, near to, or confounded with, the dilated margin. *Channels* with one to three *vittæ*. *Albumen* flat in front. *Pericarp* double. *General involucre* various, *partial* of numerous segments.—Name from *πευκη*, a *Pine tree*; and *δωρος* *dwarf*; on account of the narrow leaves of some of the species resembling a *Pine tree*, or from some species giving a resinous extract.

1. *P. officinale*, Linn. (Fig. 454.) *Hog's Fennel*, or *Sea Sulphur Weed*. Stem round, striated; leaves five times tri-partite; leaflets linear, flaccid, tapering at the extremities; involucre of few linear deciduous segments; pedicles two or three times longer than the fruit.

English Botany, t. 1767.—English Flora, vol. ii. p. 99.—Hooker, British Flora, vol. i. p. 134.—Lindley, Synopsis, p. 117.

Root tapering, large, stout, fleshy, containing a resinous juice of a sulphureous smell. *Stem* erect, round, smooth, numerous striated, slender, smooth, branched and leafy. *Leaves* on round striated foot-stalks, large, divided, five times tri-partite, *leaflets* simple, linear, flat, about an inch and half long, tapering at each end, three ribbed, the terminal leaflet of three segments. *Umbels* terminal and lateral, large, of numerous long slender unequal striated *rays*, the *partial* of numerous very slender nearly equal rays, both *general* and *partial involucre* of numerous narrow linear segments, soon falling away, sometimes one or two remaining. *Flowers* numerous, yellow. *Calyx* of five small acute teeth. *Petals* inversely heart-shaped, nearly entire, with a small inflexed point. *Stamens* on long slender *filaments*, with small roundish *anthers*. *Styles* short, elongating, and reflexed, the *stigmas* small, notched. *Disk* somewhat convex. *Fruit* ovate, flattened at the back, with a narrow flat dilated margin. *Carpels* with slender filiform nearly equal *ridges*, the two near the dilated margin scarcely distinguished. *Channels* with from one to three *vittæ*. *Albumen* flat in front, convex at the back.

Habitat.—Salt marshes and meadows; very rare. In Kent, Sussex, and Essex.

Perennial; flowering from July to September.



453

Tordylium officinale.



454

Peucedanum officinale.



455

Peucedanum palustre.



456

Imperatoria astruthum.



457

Daucus carota.



458

Daucus maritimus.

The whole plant, when bruised, has a strong disagreeable sulphureous smell, and an acrid, unctuous, bitterish taste. The root, when wounded, especially during the Spring and Autumn months, yields a considerable quantity of yellow juice, which soon dries into a solid gum or resinous mass, which retains the taste and smell of the fresh plant. It was formerly used as a medicine in nervous affections, and esteemed useful in hypochondriasis; but the plants grown with us do not yield any quantity of the resinous matter, the juice nearly all evaporating away: this perhaps is owing either to the soil or climate. It grows much more luxuriantly, and is stronger in warmer climates than with us; but its use as a medicine is now abandoned.

2. *P. palus'tre*, Mærch. (Fig. 455.) *Marsh Hog's Fennel*, or *Milk Parsley*. Stem furrowed; leaves ternate; leaflets pinnatifid, with linear lanceolate segments, tipped with a hard point; involucre of numerous lanceolate segments; rays of the umbels rough.

Hooker, British Flora, vol. i. p. 134.—Lindley, Synopsis, p. 116.—*Selinum palustre*, Linn.—English Botany, t. 229.—English Flora, vol. ii. p. 97.

Root tapering, with numerous long fibres. *Stem* erect, roundish, deeply furrowed, smooth, about five feet high, simple or branched above, green or purplish at the lower part. *Leaves* distant, the upper ones small, the lower on long furrowed or striated footstalks, with a thin membranous dilated somewhat sheathing base, ternate, with opposite leaflets much divided, the segments linear lanceolate, smooth, veiny, somewhat paler beneath, tipped with a hard sharp point. *Umbels* terminal and lateral, the general of numerous long unequal striated rays, rough, with short rigid hairs, as well as the *partial* short slender ones. *Involucre* both *general* and *partial* of numerous lanceolate taper pointed segments, veiny and rough, with hairs. *Flowers* white, equal, numerous. *Calyx* of five small obtuse teeth. *Petals* ovate, notched, with an inflexed point. *Stamens* on long slender filaments, with small ovate anthers. *Styles* short, elongating after flowering. *Stigmas* small, obtuse. *Disk* convex. *Fruit* elliptical, flattened at the back with a broad dilated, smooth, even, entire border. *Carpels* with five equi-distant slender ridges, three at the back, the two lateral ones close to the margin scarcely distinguishable. *Channels* with three *vittæ*, not so superficial as those of the last species. *Albumen* flattened.

Habitat.—Marsh and damp boggy situations, by the side of rivers; but not common. Yorkshire, Lancashire, about Norwich and the Isle of Ely, Ardincaple, on the Clyde in Scotland.—*Mr. Hopkirk*.

Biennial; flowering in July.

The whole plant abounds with a white, thick, fetid juice, bitter; which, upon drying, leaves a brownish gum-resin, possessing the same qualities as the last. It is said the roots are used in Russia in the place of ginger.

GENUS LXXVI. IMPE'RATORIA.—LINN. *Master-wort.*

GEN. CHAR. *Calyx* margin obsolete, (*the rest as in Peucedanum*).—

Name from *impero*, to overcome; so named because its leaves extend over smaller plants and smother them.

1. *I. Ostruth'ium*, Linn. (Fig. 456.) *Great Masterwort.* Leaves bi-ternate; leaflets broadly ovate, cut and serrated, unequal at the base; sheath of the footstalks very large; general involucre wanting.

English Botany, t. 1380.—English Flora, vol. ii. p. 78.—*Peucedanum Ostruthium*, Koch.—Hooker, British Flora, vol. i. p. 135.—Lindley, Synopsis, p. 116.

Root tuberous, with long spreading fibres, fleshy, acrid and aromatic. *Stem* erect, from one to two feet high, round, smooth, finely striated, leafy, scarcely branched above. *Leaves* on long footstalks, with large dilated striated membranous sheaths, mostly purple on the margin, ternate, with large broadly ovate lanceolate leaflets, unequal at the base, the lower edge shortest, irregularly cut and serrated, the lateral ones with a large lobe on the lower side, sometimes of three lobes, as is always the terminal leaflet, somewhat paler beneath, with prominent ribs and netted slender veins, the upper leaves much smaller than the lower. *Umbels* terminal, and sometimes lateral, large, the *general* of numerous long unequal striated rays, and the *partial* of numerous unequal slender ones. *General involucre* wanting, *partial* of a few linear segments. *Flowers* numerous, white, crowded, nearly equal. *Calyx* an obsolete margin. *Petals* inversely heart-shaped, with a small inflexed point. *Stamens* on long slender filaments, with small roundish ovate anthers. *Styles* short, spreading, with obtuse stigmas. *Disk* yellow, fleshy, somewhat conical. *Fruit* oblong, flat, with a broad dilated flat margin, notched at the base and apex. *Carpels* with five slender filiform equi-distant ridges, three at the back, the two lateral ones scarcely distinguishable, close to the margin. *Albumen* flat.

Habitat.—Moist pastures in various parts of Scotland, but a doubtful native.

Perennial; flowering in June.

This plant was formerly considered an infallible remedy for almost all wounds and disorders of the body, hence some say it derived the common name of *Master-wort*. Its root is acrid, bitter, with an aromatic flavour, and is recommended as a masticatory to relieve tooth-ache; but although so much extolled formerly as to obtain for it the distinguished appellation of *divinum remedium*, it is now almost out of use, being superseded by other more powerful medicines.

TRIBE 7. DAUCINEÆ.—Koch. *Fruit* compressed at the back, or roundish, on a transverse section. *Channels* with five primary filiform bristly *ridges*, the lateral ones being placed on the commissure, and with four *secondary* ridges, bristly, and more prominent than the others, the bristles free, or united with a kind of wing. *Albumen* flattish in front, or roundish.

GENUS LXXXVII. DAUCUS.—LINN. *Carrot.*

GEN. CHAR. *Calyx* of five teeth. *Petals* obcordate, with an inflexed point, the outer ones radiant, bifid. *Fruit* compressed at the back. *Carpels* with five *primary* filiform bristly *ridges*, three at the back, the two lateral ones on the plane of the commissure, the four *secondary* ones more prominent than the rest, and with a single row of prickles. *Channels* under the secondary ridges, with single *vittæ*. *Albumen* flat in front. *General* and *partial involucre* of numerous segments, the former often wanting.—Name from *δαυκος*, *daucus*.

1. *D. Carota*, Linn. (Fig. 457.) *Wild Carrot.* Bristles of the fruit slender; leaves two or three pinnate; leaflets pinnatifid, with linear lanceolate acute segments; involucre of pinnatifid segments; umbels with a solitary abortive coloured flower in the centre, when in seed, concave.

English Botany, t. 1174.—English Flora, vol. ii. p. 39.—Hooker, British Flora, vol. i. p. 136.—Lindley, Synopsis, p. 113.

Root tapering, slender, yellowish, sweetish, with a pleasant aromatic smell. *Stem* erect, from one to three feet high, roundish, coarsely striated, and more or less rough, with deflexed hairs or bristles. *Leaves* small above, larger below, footstalks striated, with a dilated sheathing base, two or three times pinnate, with narrow lanceolate more or less linear acute segments, with a bristly point, smooth, or clothed more or less with white soft or rigid hairs, especially on the under side. *Umbels* terminal and lateral, the *general* of numerous unequal striated downy or smooth *rays*, spreading when in flower, concave when in seed, from the longer outer rays bending over and enclosing the shorter inner ones, and in the centre of the umbel is a short ray, with two or three abortive mostly coloured flowers, the *partial* of numerous short slender unequal ones. *General involucre* of numerous spreading pinnated segments, smooth, or somewhat rough, *partial* numerous, narrow, lanceolate, with a pale thin membranous margin. *Flowers* white or pinkish. *Calyx* of five small acute teeth. *Petals* nearly equal, except

the outer ones of the radiant flowers being bifid, the rest inversely heart-shaped, with a small inflexed point. *Stamens* with long slender *filaments*, with ovate *anthers*. *Styles* spreading, with small obtuse *stigmas*. *Fruit* oblong ovate, compressed at the back. *Carpels* clothed with rigid bristles, which have a small hook at the extremity, the *vitta* beneath the secondary ridges yellowish, abounding in an aromatic oil. *Albumen* flat in front, somewhat convex at the back.

Habitat.—Pastures and road sides, especially in a gravelly soil; frequent.

Biennial; flowering in June and July.

An extremely variable plant with regard to its hairiness and the size, and the more or less divided lanceolate segments of the leaves. We have specimens quite smooth, with broadly linear segments to the leaves, having quite a different appearance to the common state of the plant, but it is not otherwise different, and was found in a damp situation, which is probably the cause, as we find the contrary to be the case with plants grown in a dry sandy soil; they are then more rigid in their foliage, and profusely clothed with hairs, and between these two extremes all varieties may be met with.

The root is well known when cultivated, and by cultivation attains to a very large size. It is used for a variety of domestic purposes, is nutritive and wholesome, and is found to be profitably grown as food for cattle in a deep rich soil. The whole plant, especially the seeds, are diuretic, and are considered useful in gravelly and calculous affections.

2. *D. marit'imus*, *With.* (Fig. 458.) *Sea side Carrot*. Bristles of the fruit flattened; leaves tri-pinnate; leaflets pinnatifid, with short lanceolate acute segments, fleshy; umbels without abortive flowers in the centre, convex when in seed.

English Botany, t. 2560.—English Flora, vol. ii. p. 40.—Hooker, British Flora, vol. i. p. 136.—Lindley, Synopsis, p. 113.

Root slender, tapering, whitish. *Stem* erect or spreading, branched from the base, roundish, coarsely striated, thickly clothed with white hairs pointed downwards, from ten to eighteen inches high, leafy. *Leaves* on rough channeled footstalks, dilated and striated at the base, two or three times pinnated, with short broad acute or rounded segments, somewhat fleshy, and more or less profusely scattered over with hairs on the under side, somewhat shining. *Umbels* terminal, and on short lateral pedicles, the *general* of stout striated unequal spreading *rays*, without any abortive flowers in the centre, the *partial* of numerous short unequal ones. *General involucre* of numerous roughish pinnated segments, spreading, closing round the umbel when in seed, *partial* of numerous linear or pinnated roughish segments, also closing round the umbellules when in seed. *Flowers* white, or pale rose

colour, regular, except the outer petals of the radiating flowers. *Calyx* of five small acute teeth. *Petals* inversely heart-shaped, with an inflexed point. *Stamens* on long slender *filaments*, with pink ovate *anthers*. *Styles* elongating after flowering, with small obtuse *stigmas* and conical *disk*. *Fruit* larger than the last species, oblong, compressed at the back, clothed with bristles, thin, dilated, membranous, and pale at the base, with a long point, obtuse, with several small sharp reflexed teeth, the *vittæ* beneath the secondary ridges rather large. *Albumen* flat in front, somewhat convex at the back.

Habitat.—Sea Coast in Kent and Cornwall, Anglesea.—*Mr. W. Wilson*. Island of Lismore, Scotland.—*Rev. C. Smith*. Near Baldoyle and Portmarnock, Ireland.—*Mr. Mackay*.

Biennial; flowering in July and August.

The habit of this plant is quite different to the last, growing near the sea. It is branched from the base, spreading, with mostly an umbel on a short pedicle from near the base. Its different shaped leaflets, and especially the fruit, will readily distinguish it from the last species.

We have frequently found specimens of it on the north coast of Portugal, which were not different from those grown on our own coast.

SUB-ORDER 2. CAMPYLOSPERME. *Albumen* with the margins inflexed, or entire rolled inwards, or with a wide deep furrow in front.

TRIBE 8. CAUCALINEÆ.—Koch. *Fruit* contracted on the sides, or nearly round. *Carpels* with five primary *ridges*, filiform, bristly or prickly, three on the back, the two lateral ones placed on the plane of the commissure, the four *secondary* ridges more prominent than the others, prickly, or altogether obliterated by the abundance of the prickles, which fill up the channels. *Albumen* involute, or with the margins rolled inwards.

GENUS LXXVIII. CAUCALIS.—LINN. *Bur Parsley*.

GEN. CHAR. *Calyx* of five teeth. *Petals* obcordate, with an inflexed point, the outer ones radiant and deeply bifid. *Fruit* slightly compressed on the sides. *Carpels* with five primary filiform bristly or prickly *ridges*, three at the back, the two lateral ones on the plane of the commissure, the four *secondary* ridges more prominent, with one or two rows of prickles. *Channels* under the secondary ridges with single *vittæ*. *Albumen* deeply channelled in

front. *General* and *partial involucre* various.—Name from *δαυκαλις*, the *daucus*; from possessing similar properties to the carrot.

1. *C. daucoi'des*, Linn. (Fig. 459.) *Small Bur Parsley*. Leaves bi-pinnatifid or tri-pinnatifid; segments linear, acute, short; umbels of few rays; general involucre none; partial umbels of few flowers, with an involucre of three segments; prickles of the fruit hooked at the apex.

English Botany, t. 197.—English Flora, vol. ii. p. 41.—Hooker British Flora, vol. i. p. 137.—Lindley, Synopsis, p. 114.

Root tapering, fibrous, whitish, somewhat woody. *Stem* much branched from the base, bushy, roundish or angular, deeply striated or furrowed, smooth or hairy, especially at the joints, leafy. *Leaves* on channeled footstalks, with a dilated membranous edged base, smooth, or slightly hairy, two or three times pinnated, with numerous short narrow linear acute segments. *Umbels* terminal, the general of three or four stout angular striated rays, somewhat downy, the *partial* of about the same number of short ones. *General involucre* none, or of two or three small narrow linear segments, the *partial* of three or four lanceolate ones. *Flowers* white or pinkish, seldom all perfect. *Calyx* of five lanceolate short teeth. *Petals* inversely heart-shaped, with a small inflexed point, the outer ones somewhat larger than the others, and bifid. *Stamens* on short filaments, with small ovate anthers. *Styles* short, stout, with obtuse stigma; and a conical disk at the base. *Fruit* large, ovate oblong, its prickles dilated at the base, tapering upwards with a small hooked extremity, *vittæ* under the secondary ridges rather large, simple. *Channels* obliterated by the prickles. *Albumen* convex at the back, deeply channeled in front.

Habitat.—Corn fields, in a chalky or clay soil. In Norfolk, Oxfordshire, Cambridgeshire, Nottinghamshire, Lincolnshire, and Yorkshire; but not very frequent. Not known in Scotland or Ireland.

Annual; flowering in June.

2. *C. latifolia*, Linn. (Fig. 460.) *Great Bur Parsley*. Hispid, leaves pinnate; leaflets decurrent, cut and serrated; umbels of two or three rays; involucre with ovate membranous segments.

English Botany, t. 198.—English Flora, vol. ii. p. 41.—Hooker, British Flora, vol. i. p. 136.—Lindley, Synopsis, p. 114.—*Turgenia latifolia*, Hoffm.

Root tapering. *Stem* about three feet high, roundish, striated, or furrowed, branched, and somewhat spreading, rough, with minute rigid prickles pointed upwards. *Leaves* from three to six inches long, simply pinnate, with channeled footstalks, dilated at the base into a sheath, with pale membranous edges, leaflets pinnatifid, or cut or deeply serrated, lanceolate, a somewhat glaucous green, as is the whole plant, veiny beneath, the upper ones decurrent at the base in the lower

margin. *Umbels* lateral and terminal, the *general* of three or four long, stout, rough, furrowed *rays*, the *partial* of numerous short unequal ones, the central ones mostly with abortive flowers. *Flowers* rose colour, the central ones nearly regular, the outer ones radiant, with one or two petals, larger than the rest, and bifid. *Petals* inversely heart-shaped, with a small inflexed bifid point. *Stamens* with short *filaments* and small ovate *anthers*. *Styles* short, stout, with small obtuse *stigmas*. *Calyx* broadly lanceolate acute segments. *Fruit* oblong, laterally contracted, almost divided. *Carpels* with two ridges placed upon the margin of the commissure, the remaining seven with two or three rows of equal prickles. *Channels* obliterated, *vittæ* beneath the secondary ridges simple, rough. *Albumen* convex at the back, deeply channeled in front.

Habitat.—Fields in a chalky soil, rare; frequent in Cambridgeshire. Annual; flowering in July.

This, the most beautiful of the tribe, is made a separate genus by Hoffmann, on account of its laterally contracted nearly double fruit, two of the ridges being placed on the margin of the commissure, and the others having two or three rows of prickles; in other respects it is not different, either in character or habit, and these we do not think of sufficient constancy to constitute it a distinct genus.

GENUS LXXIX. TORILUS.—ADAUSON. *Hedge Parsley*.

GEN. CHAR. *Calyx* of five teeth. *Petals* obcordate, with an inflexed point, the outer ones radiant, and deeply bifid. *Fruit* with the sides compressed. *Carpels* with five *primary ridges*, bristly, three at the back, the two lateral ones on the plane of the commissure, the *secondary ridges* obliterated by the numerous prickles which occupy the whole of the channels, under which are the single *vittæ*. *Albumen* deeply channeled in front. *General* and *partial involucre* of numerous segments—Name of doubtful derivation.

1. *T. Anthriscus*, Gærtn. (Fig. 461.) *upright Hedge Parsley*. Stem erect, branched; leaves bi-pinnate; leaflets lanceolate, cut and serrated; umbels terminal; involucre of several awl-shaped segments; fruit with simple hooked incurved-prickles.

English Botany, t. 987. - English Flora, vol. ii. p. 43.—Hooker, British Flora, vol. i. p. 137.—Lindley, Synopsis, p. 114.

Root small, tapering, branched. *Stem* erect, from one to three feet high, much branched from the base, roundish, furrowed or striated, rough, with reflexed rigid hairs, leafy, hard and wiry. *Leaves* alternate, bi-pinnate, on rather long slender footstalks, with a thin dilated scarcely sheathing base, rough and channeled above, leaflets lanceo-

late, cut and sharply serrated, hairy, veiny, and somewhat paler beneath, occasionally almost smooth. *Umbels* terminal and lateral, on long slender peduncles, the *general* of about eight almost equal slender striated *rays*, the *partial* of about the same number of short ones. *General involucre* of from four to six awl-shaped segments, the *partial* smaller. *Flowers* white or pinkish. *Calyx* teeth small. *Petals* inversely heart-shaped, with an inflexed point, the outer ones radiant, larger than the others, and bifid. *Stamens* on short awl-shaped *filaments*, with small roundish *anthers*. *Fruit* small, obovate, clothed with incurved bristles, with a small point at the apex, and crowned by the elongated recurved *styles*, and somewhat conical base of the *disk*. *Albumen* deeply channelled in front, roundish at the back.

Habitat.—Hedges and waste places; not uncommon.

Annual; flowering in July.

2. *T. infesta*, Spreng. (Fig. 462.) *Spreading Hedge Parsley*. Stem with spreading branches; leaves bi-pinnate; leaflets ovate-lanceolate, pinnated, serrated, the terminal leaflet often elongated; general involucre of one segment, or wanting; the partial of several awl-shaped ones; prickles of the fruit with several hooks at the back.

English Botany, t. 1314.—English Flora, vol. ii. p. 43.—Hooker, British Flora, vol. i. p. 137.—Lindley, Synopsis, p. 114.—*Scandex infesta*, Linn.—*Caucalis infesta*, Hudson.—*Torilis Helvetica*, Gmel.

Root small, tapering, branched. *Stem* from six to eighteen inches high, branched from the base, spreading, roundish, furrowed or striated, rough, with short reflexed rigid hairs, leafy. *Leaves* alternate, bi-pinnate, on shortish channelled footstalks, dilated at the base, and somewhat sheathing, roughish, leaflets ovate-lanceolate, deeply cut in a pinnate manner, serrated, the terminal leaflet of the upper leaves especially elongated into lanceolate rough, especially on the under side, and veiny. *Umbels* terminal and lateral, on slender long peduncles, the *general* of about six rough equal *rays*, the *partial* of numerous short ones. *General involucre* of one awl-shaped segment, or frequently wanting, the *partial* of numerous narrow rough ones. *Flowers* whitish or pink. *Calyx* of five small white hoary teeth. *Petals* inversely heart-shaped, with an inflexed point, the outer ones of the radiant flower larger than the others, and bifid. *Stamens* on slender *filaments*, with ovate notched *anthers*, of a yellowish or purple colour. *Style* about as long again as the convex fleshy *disk*. *Stigmas* small, obtuse. *Fruit* ovate, crowded with roughish prickles, having at the apex several reflexed small hooks, and three rows at the back of each carpel, with small slender close pressed ones pointed upwards. *Albumen* rounded at the back, deeply channelled in front, or with the sides rolled inwards.

Habitat.—Fields and road sides; common.

Annual; flowering in June and July.



459

Caulis daucoides



460

Caulis latifolia.



461

Torilis anthriscus.



462

Torilis infesta.



463

Torilis nodosa.



464

Scandicines pecten

3. *T. nodo'sa*, Gärtn. (Fig. 463.) *Knotted Hedge Parsley*. Stem prostrate; branches spreading; leaves bi-pinnate; leaflets pinnatifid and cut; umbels opposite, sessile, globose; fruit on the outer side with prickles, on the inner, rough, with granules.

English Flora, vol. ii. p. 44.—Hooker, British Flora, vol. i. p. 137.—Lindley, Synopsis, p. 114.—*Caucalis nodosa*.—English Botany, t. 199.—*Tordylium nodosum*, Linn.

Root slender, branched. *Stem* prostrate, with spreading leafy branches, about a foot long, round, striated, rough, with reflexed bristles, sometimes almost smooth. *Leaves* bi-pinnate, on striated footstalks, channeled above, rough, with bristles, leaflets ovate-lanceolate opposite, pinnatifid, with simple lanceolate, linear, acute, short or cut segments, rough, with bristles, especially on the under side, the terminal leaflet mostly elongated. *Umbels* small opposite the base of a leaf, crowded into a globose form, sessile, or on a very short pedicle, with about three short rays. *General involucre* mostly wanting, or of one segment, the partial of several awl-shaped bristly ones. *Flowers* very small, white, or pinkish. *Calyx* small. *Petals* very small, nearly regular, inversely heart-shaped, with a small inflexed point, the outer ones rather larger. *Stamens* on short filaments, with small roundish ovate pinkish or white anthers. *Styles* very short, with a flattish disk. *Fruit* ovate, those on the outer side of the umbels clothed with rough prickles, with several small reflexed teeth at the apex, but those carpels on the inner side and the centre of the umbels rough, with hoary granulations, without prickles. *Albumen* rounded at the back, channeled in front.

Habitat.—Road sides and waste places; frequent, especially in a dry gravelly or chalky soil.

Annual; flowering in May and June.

The plants of this genus are in many parts of the country troublesome weeds; the seeds are conveyed about by birds, animals, &c., sticking to them by their small hooked prickles, which are very curiously constructed, and very beautiful objects beneath the microscope.

TRIBE 8. SCANDICINÆ.—Koch. *Fruit* with the sides compressed or contracted, often beaked. *Carpels* with five primary equal filiform sometimes winged ridges, the lateral ones forming the margins. Secondary ridges none, and sometimes the whole are obliterate, except in the beak. *Albumen* convex at the back, deeply channeled in front, or the margins rolled inwards.

GENUS LXXX. SCAN'DIX.—LINN. *Shepherd's Needle.*

GEN. CHAR. *Calyx* an obsolete margin. *Petals* obovate, with an inflexed point. *Fruit* with the sides compressed, and with a very long beak. *Carpels* with five obtuse equal *ridges*, the lateral ones forming the margin. *Channels* without or with scarcely any *vittæ*. *Albumen* roundish, with a deep furrow in front. *General involucre* wanting, or of few segments, *partial* of from five to seven.—Name from *σκηω*, to prick, from the shape of the seeds.

1. *S. Pec'ten*, Linn. (Fig. 464.) *Needle Chervil*, *Venus' Comb*, or *Shepherd's Needle*. *Involucre* with the segments two or three times cut, or entire; fruit compressed at the back, rough, with a bristly edged beak; leaves cut into numerous short linear segments.

English Botany, t. 1397. English Flora, vol. ii. p. 46.—Hooker, British Flora, vol. i. p. 137.—Lindley, Synopsis, p. 125.

Root tapering, somewhat woody. *Stems* mostly numerous, sometimes simple, branched, leafy, spreading, about a foot high, roundish, furrowed, smooth, or scattered over with spreading hairs. *Leaves* on slender footstalks, dilated and sheathing at the base, with a pale membranous mostly fringed margin, tri-pinnate, smooth, pale green, with short linear acute numerous segments. *Umbels* terminal and lateral, numerous, mostly in pairs, the *general* of seldom more than two *rays*. *General involucre* none, *partial* of numerous segments, simple, or more or less numerous cut in a pinnate manner, roughish on the margins. *Flowers* white, not very numerous, on short footstalks. *Calyx* an obsolete margin. *Petals* unequal, the outer ones larger than the others, obovate, with a mid-rib, notched at the extremity with a small inflexed point. *Stamens* with awl-shaped *filaments* and small dark *anthers*. *Styles* straight, with small obtuse *stigmas*. *Disk* concave, dark coloured. *Fruit* ovate oblong, with a very long stout beak, as broad at the base as the fruit, tapering upwards to a point, smooth, somewhat striated, with a pale margin, rough, with sharp rigid bristles on the margin pointed upwards, and crowned by the straight styles, *ridges* of the fruit pale, obtuse, rough, with minute sharp points. *Channels* shallow, without or with a simple dark coloured *vittæ*, running the whole length of the channels. *Albumen* roundish at the back, deeply furrowed in front.

Habitat.—Corn fields abundant.

Annual; flowering in June and July.

This plant does not appear to be applied to any particular purpose; in some parts of the country it is so abundant as to be a troublesome weed; it is very variable in size and appearance: we have perfect full grown plants in seed not more than an inch and half high, and others

sixteen. The fruit is very remarkable with its long rough edged beak, with the spines pointed upwards, which seems to be a provision to allow the seed to pass with ease only in one direction, for the spines offer considerable resistance to its passing, but in a downward direction. This may be to secure the germination of the seed, for otherwise the long beak would appear greatly to prevent its passage into the soil.

GENUS LXXXI. ANTHRISCUS.—PERS. *Beaked Parsley.*

GEN. CHAR. *Calyx* an obsolete margin. *Petals* obcordate, with an inflexed often very short point. *Fruit* contracted at the sides, beaked. *Carpels* nearly round, without *ridges*, except five on the beak. *Albumen* nearly round, deeply furrowed in front. *General involucre* none, *partial* of numerous segments.—Name of doubtful origin.

* *Carpels* smooth.

1. *A. sylvestris*, Hoffm. (Fig. 465.) *Wild Beaked Parsley.* Stem hairy below, smooth above, slightly swollen below the joints; fruit oblong, smooth, slightly tuberculated; channels on the beak about one-fifth the length of the fruit; involucre with numerous fringed segments.

Hooker, British Flora, vol. i. p. 137.—Lindley, Synopsis, p. 124.—*Chærophyllum sylvestris*, Linn.—English Botany, t. 752.—English Flora, vol. ii. p. 48.

Root tapering. *Stem* from three to four feet high, angular and furrowed, hairy and purplish in the lower part, green and smooth above, somewhat swollen beneath its joint, branched and leafy. *Leaves* large, with slender long striated hairy footstalks, the base dilated, long, sheathing, striated, mostly clothed in short pubescence, the margins thin and membranous, thrice pinnated, the leaflets ovate or ovate-lanceolate, deeply cut and serrated, the upper ones nearly smooth, the lower hairy, especially beneath and on the mid-ribs, and somewhat paler. *Umbels* lateral and terminal, at first drooping, becoming erect and spreading, the *general* of numerous slender rays, the *partial* of short ones. *General involucre* none, *partial* of numerous lanceolate ribbed membranous reflexed segments, with a fringed border of very slender silky hairs. *Flowers* numerous, white, the outer ones with some of the petals larger than the others. *Petals* inversely heart-shaped, with a small inflexed point. *Stamens* on slender filaments, with roundish anthers. *Styles* at first very short, becoming elongated. *Disk* convex, spreading. *Fruit* oblong, smooth, with a beak about

one-fifth its length, with five equal obtuse *ridges*. *Albumen* roundish at the back, deeply furrowed in front.

Habitat.—Fields and shady places; frequent.

Perennial; flowering in June and July.

This plant has not an unpleasant smell, something like carrots; and as it grows only in the greatest luxuriance in a good rich soil, that circumstance is said to be a guide as to the fertility of the land. It is occasionally used as pot-herb, and is a favourite food of cattle and rabbits. The leaves give a good green dye, and the umbels a yellow. The flowers are the resort of numerous insects, who appear to be attracted by its sweets.

2. *A. Cerefo'lium*, Hoffm. (Fig. 466.) *Garden Beaked Parsley*. Stem swollen beneath the joints; the lateral umbels sessile; leaves tri-pinnate, smooth, except on the nerves on the under side; leaflets ovate, pinnate, with obtuse segments; fruit linear, smooth, with a long beak, and channels half as long as the fruit.

Hooker, British Flora, vol. i. p. 138.—Lindley, Synopsis, p. 124.—*Scandix Cerefolium*, Linn.—English Botany, t. 1268.—*Chærophyllum sativum*, Bauh.—English Flora, vol. ii. p. 48.

Root small, tapering, annual. *Stem* slender, erect, round, smooth, finely striated, slightly swollen beneath the joints, and somewhat hairy above them, from one to two feet high, branched and leafy. *Leaves* thrice pinnate, delicate pale green, with slender footstalks, hairy, and somewhat dilated at the base, leaflets ovate, pinnated, smooth, except the veins on the under side being somewhat hairy. *Umbels* terminal and lateral, the lateral ones sessile at the axis of the upper leaves, the *general* of about four long slender rays, the *partial* of numerous short stout ones. *General involucre* none, the *partial* of about three linear segments on one side. *Flowers* numerous, white, the outer ones with three of the petals larger than the others. *Calyx* an obsolete margin. *Petals* inversely heart-shaped, with a small inflexed point. *Stamens* on slender filaments, with small roundish *anthers*. *Styles* very short, with small obtuse *stigmas*, and very small fleshy *disk*. *Fruit* linear, oblong, smooth and shining, minutely dotted, and frequently tuberculated, the beak about one-third the length of the fruit, with obtuse ridges. *Albumen* roundish, with a deep furrow in front.

Habitat.—Hedges and about gardens; not unfrequent.

Annual; flowering in July.

Under the name of Garden Chervil this plant is frequently cultivated on the Continent, where it is much used as a salad, with other vegetables, and as a pot-herb; but in England it is not much used.

** *Carpels clothed with spines*.

3. *A. vulga'ris*, Pers. (Fig. 467.) *Common Beaked Parsley*. Stem smooth; leaves tri-pinnate, smooth, or scattered over with hairs;



465

Anthriscus sylvestris.



466

Anthriscus cerefolium



467

Anthriscus vulgaris.



468

Chærophylllum temulentum.



469

Chærophylllum aureum.



470

Chærophylllum aromaticum

leaflets pinnate, with obtuse segments; umbels opposite the leaves; fruit ovate, clothed with incurved prickles, the beak one-third its length; stigmas nearly sessile.

English Flora, vol. ii. p. 45.—Hooker, British Flora, vol. i. p. 138.—Lindley, Synopsis, p. 124.—*Scandix Anthriscus*, Linn.—English Botany, t. 818.

Root tapering, with numerous branched fibres. *Stem* erect, about two feet high, round, smooth, striated, somewhat swollen beneath each joint, branched and leafy. *Leaves* alternate, thrice pinnated, with long channeled footstalks, finely striated, smooth, except about the joints and the smaller branches, much dilated at the base, and sheathing, with a thin white membranous margin, much fringed with fine silky hairs; leaflets a beautiful pale green, ovate oblong, pinnated, with narrow obtuse or acute segments, smooth, except being scattered over sometimes with white hairs, especially on the under side. *Umbels* on short pedicles from the axis of the upper leaves, the *general* of about six slender mostly equal rays, and the *partial* of about six short unequal ones. *General involucre* none, *partial* of about six lanceolate ones, with a membranous fringed margin. *Flowers* small, white, nearly equal. *Calyx* a slender obsolete margin. *Petals* inversely heart-shaped, with a small inflexed point. *Stamens* on short filaments, with small roundish anthers. *Styles* very short, scarcely observable. *Stigmas* small, obtuse. *Fruit* ovate, clothed with short rigid prickles, with a small incurved point, the beak contracted, furrowed, about one-third the length, and frequently there are three dorsal very slender ridges the whole length of the fruit. *Albumen* rounded at the back, furrowed in front.

Habitat.—Waste places, hedges and road sides; frequent, especially near towns and villages.

Annual; flowering in May and June.

Common Beaked Parsley, or Chervil, has some resemblance in its foliage to the Garden Chervil, for which it has been sometimes gathered in mistake, and it has like it a sweetish aromatic flavour; but its spinous fruit, much more branched stouter stem, and lateral pedunculated umbels, will readily distinguish it from other species.

GENUS LXXXII. CHÆROPHYLLUM.—LINN. *Chervil*.

GEN. CHAR. *Calyx* an obsolete margin. *Petals* obcordate, with an inflexed point. *Fruit* contracted at the sides, beaked. *Carpels* with five very obtuse equal ridges, the lateral ones forming the margins, the commissure with a deep furrow. *Channels* with single vittæ. *Albumen* roundish, deeply furrowed in front

General involucre wanting, or of a few segments *partial*, of numerous ones.—Named from χαίρω, to rejoice; and φύλλον, a leaf; said to be so called from the abundance of the leaves.

1. *C. temulen'tum*, Linn. (Fig. 468.) *Rough Chervil*. Stem rough, swollen below the joints, spotted; leaves bi-pinnate; leaflets ovate oblong, lobed; partial involucre with reflexed ovate-lanceolate ciliated segments.

English Botany, t. 1521.—Hooker, British Flora, vol. i. p. 138.—Lindley, Synopsis, p. 125.—*Myrrhis temula*, Spreng.—English Flora, vol. ii. p. 51.

Root tapering, with branched fibres. *Stem* erect, branched, from two to three feet high, round, rough, with hairs pointed downwards, swollen beneath each joint, solid, a dark green, with purple spots, and the lower part mostly altogether purple, striated, and leafy. *Leaves* alternate, the lower ones on long channeled footstalks, with a dilated sheathing base, clothed with rough hairs, twice pinnate, with lobed pinnated leaflets, serrated, or crenated on the margin, rough, with hairs, somewhat paler and veiny beneath. *Umbels* lateral and terminal, numerous, the *general* of numerous long slender unequal rays, more or less hairy, the *partial* smooth, or nearly so, numerous, unequal. *General involucre* either wanting, or of from one to five short lanceolate erect hairy segments, the *partial* of numerous lanceolate ovate nearly smooth reflexed ones, with membranous ciliated margins, and a mid-rib. *Flowers* white or yellowish, nearly regular, those in the centre of the umbels mostly barren, the outer ones somewhat rayed. *Calyx* a very narrow margin. *Petals* inversely heart-shaped, with a small inflexed point, and mid-rib. *Stamens* with rather long slender filaments, and small round anthers. *Styles* short, recurved, with small obtuse stigmas, and a small concave disk. *Fruit* linear, oblong, with the sides compressed, smooth. *Carpels* round at the back, flat in front, with five equal very obtuse ridges, the lateral ones forming the margins. *Channels* each with a single slender vittæ. *Albumen* round at the back, deeply channeled in front.

Habitat.—Road sides, hedges, and shady places; frequent.

Perennial; flowering in June and July.

2. *C. aure'um*, Linn. (Fig. 469.) *Tawny-seeded Chervil*. Stem swollen, and hairy beneath the joints; leaves tri-pinnate; leaflets pinnated, lanceolate, acuminate, cut and serrated; partial involucre of spreading broadly lanceolate segments, with long slender points and ciliated margins.

English Botany, t. 2103.—Hooker, British Flora, vol. i. p. 138.—Lindley, Synopsis, p. 125.—*Myrrhis aurea*, Spreng.—English Flora, vol. ii. p. 52.

Root tapering, with branched fibres. *Stem* erect, three feet high, much branched upwards, angular, furrowed, and downy, especially

about the somewhat swollen joints, leafy. *Leaves* large, thrice pinnate, footstalks striated, channeled, downy at the base, dilated into a long thin striated sheath, the lower ones long, *leaflets* ovate at the base, lanceolate upwards, with a remarkable long attenuated point, pinnated or cut at the base with serrated segments, but towards the point simply serrated, the serratures fine, sharp, somewhat curved upwards, downy, especially on the ribs on the under side, which is rather paler than the upper. *Umbels* numerous, lateral and terminal, the *general* of numerous long slender angular *rays*, unequal, the *partial* of numerous short unequal ones. *General involucre* none, or of one or several linear lanceolate downy segments, the *partial* of numerous ovate-lanceolate reflexed segments, with very downy margins, and a very slender point of variable length. *Flowers* numerous, white, or cream coloured, nearly equal, the outer ones somewhat radiant, the central ones mostly barren. *Calyx* a narrow margin. *Petals* inversely heart-shaped, with an inflexed point. *Stamens* with slender *filaments*, and small roundish *anthers*. *Styles* short, becoming elongated and recurved, the *stigmas* small, obtuse, the *disk* dilated, convex, fleshy. *Fruit* linear, somewhat thickened upwards, smooth, or slightly hairy, of a tawny colour, and short beak. *Carpels* with the sides compressed, having five very obtuse equal *ridges*, the lateral ones forming the margins. *Channels* with single slender *vittæ*. *Albumen* rounded at the back, furrowed in front.

Habitat.—Fields between Arbroath and Montrose. Near Corstorphine, Edinburgh.—*Mr. G. Don*.

Perennial ; flowering in June.

3. *C. aromaticum*, Linn. (Fig. 470.) *Broad Leaved Chervil*. Stem swollen beneath the joints ; leaves sub-ternate ; leaflets ovate oblong, acuminate, serrated, undivided ; partial involucre of broadly lanceolate segments, with long slender points and ciliated margins.

English Botany, t. 2636.—Hooker, British Flora, vol. i. p. 139.—Lindley, Synopsis, p. 125 —*Myrrhis aromatica*, Spreng.—English Flora, vol. ii. p. 52.

Root tapering, branched. *Stem* erect, branched, from two to three feet high, rough, with hairs pointing downwards, angular and furrowed, somewhat swollen beneath the joints, and marked with purple spots. *Leaves* two or three times pinnated, footstalks striated, channeled, and hairy, the base dilated into a long thin striated sheath, with a pale membranous margin, *leaflets* ovate oblong, acuminate at the point, the base unequal, rounded, or heart-shaped, the terminal one tapering, either on a short footstalk or sessile, sharply, sometimes doubly serrated, about two inches long, smooth above, paler beneath, and sometimes hairy. *Umbels* terminal and lateral, the *general* of numerous long slender angular slightly unequal *rays*, the *partial* of numerous short unequal ones. *General involucre* wanting, or of a short lanceo-

late segment, with a membranous margin and fringed edge, *partial* of about ten reflexed ones, with a long slender point. *Flowers* numerous, white, one or two only in the centre fertile. *Calyx* an obsolete margin. *Petals* inversely heart-shaped, with a small inflexed point, those of the outer flowers larger than the others. *Styles* short, spreading. *Stigmas* small, obtuse. *Disk* conical. *Fruit* oblong, smooth, with compressed sides. *Carpels* roundish at the back, with five obtuse or flattish *ridges*, the two lateral ones forming the margin. *Channels* with single slender *vittæ*. *Albumen* roundish at the back, furrowed in front.

Habitat.—Road side near Guthrie, leading to Arbroath, Scotland.—*Mr. G. Don*.

Perennial; flowering in June.

GENUS LXXXIII. MY'RRHIS.—SCOPOLI. *Cicely*.

GEN. CHAR. *Calyx* an obsolete margin. *Petals* obcordate, with an inflexed point. *Fruit* laterally compressed. *Carpels* with a deep furrow between them, of five equal acutely winged hollow *ridges*. *Channels* deep, without *vittæ*. *Albumen* closely invested with a second covering of the pericarp, the sides rolled inwards. *General involucre* none, *partial* of numerous segments.—Name from *Myrrha*, *Myrrh*, from the peculiar odour of the leaves.

1. *M. odor'ata*, Scop. (Fig. 471.) *Sweet Cicely*. Leaves villous; partial involucre numerous, lanceolate, with a long slender point and ciliated margin; fruit large.

English Flora, vol. ii. p. 50.—Hooker, British Flora, vol. i. p. 139.—Lindley, Synopsis, p. 125.—*Scandix odorata*, t. 697.

Root tapering, fleshy, sweet and aromatic. *Stem* erect, from two to four feet high, round, finely striated, smooth or downy, especially about the joints, leafy, branched. *Leaves* large, thrice pinnated, more or less thickly clothed with soft pubescence, paler beneath, above palish green, frequently about the middle of the leaves spotted, with irregular pale almost white blotches, footstalks long of the lower leaves, shorter above, hollow, striated, and downy, the base much dilated into a large striated sheath, embracing the branches, leaflets ovate-lanceolate, pinnatifid, cut and serrated. *Umbels* mostly terminal, of numerous long downy nearly equal *rays*, the *partial* ones slender, short. *General involucre* none, *partial* of numerous lanceolate ones, with a long slender point, and more or less fringed margin, pale, thin, ribbed and membranous, reflexed. *Flowers* white, nearly equal, the central ones, and frequently whole umbels abortive. *Petals* inversely heart-shaped, with a small inflexed point. *Stamens* on long slender *filaments*, with small



471

Myrrhis odorata.



472

Physospermum cornubiense.



473

Smyrnium olusatrum.



474

Echinophora spinosa.



475

Conium maculatum.



476

Coriandrum sativum.

heart-shaped *anthers*. *Styles* short, elongating, spreading. *Stigmas* small, globose. *Disk* small, conical. *Fruit* large, dark brown, smooth, polished, elliptical, acute at the apex, contracted into a short beak, somewhat serrated, the sides compressed. *Carpels* with five equal prominent *ridges*, acute, with two shallow fine furrows near the edge, formed by an internal white fibrous thread, running the whole length of the outer angle of the hollow cavity in the ridges. *Channels* deep, quite smooth, without *vittæ*. *Albumen* rounded at the back, the sides rolled inwards, or deeply furrowed in front, closely invested with a secondary covering of the pericarp.

Habitat.—Pastures, river sides, and shady places; in the middle and north of England, and lowlands of Scotland, but not very common. Perennial; flowering in May and June.

The seeds, as well as the whole plant, have a pleasant aromatic odour. It has long been cultivated, though now much neglected; it was esteemed a culinary herb, grateful both to the palate and stomach, being gently aperient and diuretic. The leaves were used in salads, and the roots and stems eaten boiled or candied with sugar into a sweetmeat; and in Germany the seeds are used to flavour some kinds of soups: while in the North of England they are used to perfume and polish oaken floors and furniture.

TRIBE 9. SMYRNEÆ.—Koch. *Fruit* turgid, with the sides compressed or contracted. *Carpels* with five primary *ridges*, the lateral ones forming the margin, or placed before it, sometimes the ridges are nearly obliterated. *Albumen* with the sides rolled inwards, or furrowed in front.

GENUS LXXXIV. PHYSOSPERMUM.—CUSSON.

Bladder Seed.

GEN. CHAR. *Calyx* margin of five teeth. *Petals* obcordate, with an inflexed point. *Fruit* laterally compressed. *Carpels* roundish, with five equal *ridges*, of which the lateral ones are placed within the margin. *Channels* with single *vittæ*. *Albumen* with the sides rolled inwards. *General* and *partial involucre*s of numerous segments.—Named from *φύσα*, a bladder; and *σπέρμα*, a seed; from the shape of the seed.

1. *P. Cornubiense*, Hook. (Fig. 472.) *Cornish Bladder Seed*. Stem erect, rough below, smooth above; root leaves bi-ternate or tri-ternate;

leaflets wedge-shaped, lobed, and cut, the margins rough; those of the stem linear, lanceolate, entire.

Hooker, British Flora, vol. i. p. 140.—*Physospermum commutatum*, Sprengel.—Lindley, Synopsis, p. 126.—*P. aquilegifolium*, Koch.—*Ligusticum aquilegifolium*, Willd.—*L. Cornubiense*, Linn.—English Botany, t. 683.—English Flora, vol. ii. p. 82.

Root tapering, branched, somewhat fibrous. *Stem* erect, from one and half to two feet high, with short branches in a paniculated manner towards the top of the stem, round, slender, striated, purplish in the lower part, and roughish, with close short woolliness, quite smooth above. *Leaves* from the root and base of the stem seldom more than two or three times ternate, on long striated purplish footstalks, channeled on the upper side, dilated, and somewhat sheathing in the lower part, mostly smooth, but sometimes roughish, with close woolliness in the lower part, leaflets wedge-shaped, lobed, and cut, pale beneath, with darker branched veins, smooth, or scattered over with hairs, and the margins almost always rough, with short hairs; leaves of the stem few, simple, lanceolate, short, or with one or two linear lanceolate segments. *Umbels* terminating the stem and branches, the *general* of about ten nearly equal spreading smooth striated rays, the *partial* of numerous short ones. *General* and *partial involucre* of from one to five lanceolate somewhat membranous ribbed spreading segments. *Flowers* numerous, white or cream coloured, nearly regular. *Calyx* of five small teeth. *Petals* inversely heart-shaped, with an inflexed point. *Stamens* with slender filaments and small yellow anthers. *Styles* short, elongating, and spreading. *Stigmas* small, obtuse, somewhat capitate. *Disk* fleshy, flat, or convex. *Fruit* almost globose, the sides compressed, and the margins between the carpels contracted, smooth, except at the top somewhat roughish, crowned by the disk and styles. *Carpels* with five ridges, equal, three at the back, and the two lateral ones forming or within the margin. *Channels* shallow, each with a broad single vitta. *Albumen* loose within the thin swollen pericarp, half moon-shaped, on a transverse section.

Habitat.—Bushy places about Bodmin, Cornwall, and near Bideford, Devonshire; very rare.

Perennial; flowering in July.

This very rare British plant is spoken of in English Botany "as never having been found in any other part of the world except in Cornwall." We have specimens which we collected last year in sandy fields near the sea, along the north coast of Portugal, which differ in no respect from those which we have from Cornwall and Devonshire; it is not, however, there by any means a common plant, and grows in open as well as bushy places; and in shady places in the North of Italy abundant, especially at the Lucca Baths.

GENUS LXXXV. SMYR'NIUM.—LINN. *Alexanders*.

GEN. CHAR. *Calyx* an obsolete margin. *Petals* lanceolate or elliptical, entire, with a long inflexed point. *Fruit* laterally compressed, double. *Carpels* roundish, reniform, with three acute prominent *ridges* at the back, the two lateral ones nearly obliterated. *Channels* with numerous *vittæ*. *Albumen* with the sides rolled inwards. *Involucres* various.—Named from *σμύρινα*, *Myrrh*; synonymous with *μύρρα*, from the seeds having a smell resembling *Myrrh*.

1. *S. Olusatrum*, Linn. (Fig. 473.) common *Alexanders*. Stem furrowed; its leaves ternate, serrated, on footstalks.

English Botany, t. 230.—English Flora, vol. ii. p. 74.—Hooker, British Flora, vol. i. p. 140.—Lindley, Synopsis, p. 126.

Root large, fleshy, branched. *Stem* stout, erect, about three feet high, smooth, deeply furrowed, branched and leafy, solid. *Leaves* alternate, a bright yellowish green, the upper ones twice, the lower mostly thrice ternate, on smooth slender striated footstalks, with large much dilated pale membranous ribbed sheathing base fringed on the margin, with soft white downiness, leaflets large, ovate, more or less cut and serrated, paler beneath, and veiny, the terminal one wedge-shaped, often three lobed. *Umbels* terminal and lateral, large, globose, the general of numerous nearly equal angular *rays*, the *partial* of numerous short ones. *General* and *partial involucre* wanting. *Flowers* yellowish green, much crowded, nearly equal. *Calyx* an obsolete margin. *Petals* lanceolate, with a long point rolled inwards, and from one to three ribbed. *Stamens* with long slender *filaments* and ovate yellow *anthers*. *Styles* very short, elongating after flowering, and spreading. *Stigmas* small, obtuse. *Disk* large, convex, fleshy. *Fruit* black, the sides compressed. *Carpels* almost globular, hollowed out in front, the back with three acute prominent *ridges*, the lateral ones much smaller, almost obliterated. *Channels* with numerous slender *vittæ*. *Albumen* rounded at the back, the sides rolled inwards.

Habitat.—Waste ground, amongst ruins, and on rocks and cliffs, especially near the sea; not uncommon.

Biennial; flowering in May and June.

This plant, commonly known by the name of *Alexanders*, was much cultivated by the ancients as a pot-herb, on account of its mild qualities and pleasant aromatic flavour, which resides in the root as well as all other parts of the plant. It is still much used on the Continent, though in part, as it is almost entirely with us, superseded by *Celery* as a vegetable. Its specific name of *Olusatrum* is from *Olus*, a *pot-herb*, in allusion to the use made of the plant; and *ater*, *atrum* *black*, in reference to the remarkable colour of the seed.

GENUS LXXXVI. ECHINO'PHORA.—LINN. *Prickly Samphire.*

GEN. CHAR. *Calyx* margin of five teeth. *Petals* obcordate, with an inflexed point, the outer ones larger, and bifid. *Flowers* of the ray on long stalks, *sterile*, in the centre of a solitary *fertile* one. *Fruit* ovate, roundish, inclosed in a hollow receptacle, with a short protruded beak. *Carpels* with five equal depressed waved striated *ridges*. *Channels* with single *vittæ*, covered with an arachnoid membrane. *Albumen* with the sides rolled inwards. *Involucres* of numerous segments.—Name from *εχινος*, a hedgehog; and *φερω*, to bear; in reference to the prickly nature of the plant.

1. *E. Spino'sa*, Linn. (Fig. 474.) *Prickly Samphire*. Leaves pinnate; leaflets with rigid triangular spinous segments.

English Botany, t. 2413.—English Flora, vol. ii. p. 37.—Hooker, British Flora, vol. i. p. 139.—Lindley, Synopsis, p. 126.

Root tapering, long, fleshy, branched. The whole plant of a pale glaucous green, more or less thickly clothed, especially the stem and branches, with short soft pale hairs. *Stem* from one to two feet high, rigid, much branched in every direction from the base upwards, leafy, round, striated, solid. *Leaves* very hard and rigid, opposite and alternate, on striated angular footstalks, channeled above, dilated at the base with a narrow thin pale membranous margin, pinnate, leaflets rigid, triangular, with a sharp rigid spinous point, the upper leaves three-cleft. *Umbels* terminal and lateral, the *general* of several thick striated rays, swollen upwards, which forms the receptacle to the central solitary fertile flower, the *partial* of numerous, gradually becoming short towards the centre. *General involucre* of numerous simply lanceolate spinous segments, sometimes two or three cleft, the *partial* of numerous short irregular ones. *Flowers* numerous, white, the outer ones radiant, with some of the outer petals larger than the others, and bifid, the outer ones bearing stamens only, the central one only with pistils, sessile. *Calyx* of five spinous persistent teeth. *Petals* inversely heart-shaped, with an inflexed jagged point. *Stamens* on slender *filaments*, incurved, and the *anthers* small, roundish. *Disk* rather large, almost flat, fleshy. *Styles* of the central flower long, recurved, spreading. *Stigmas* very small. *Fruit* inclosed in the hollow enlarged receptacle at the top of the rays, ovate oblong, with a tapering beak projecting through the opening at the top of the receptacle, crowned by the hardened disk and styles. *Carpels* with a pale thin pericarp, with five equal waved broadish *ridges*, depressed and striated, the *channels* shallow, with single slender *vittæ*, which have a thin cobweb-like membrane stretched over them. *Albumen* on a

transverse section, roundish at the back, the sides rolled inwards, and touching each other on their edges, and forming an almost crescent-shaped cavity in the middle of the albumen. Sometimes there are rudiments of two seeds, but only one of them comes to perfection.

Habitat.—Sandy sea shores. Found formerly on the coast of Lancashire and Kent, but now apparently extinct.

Perennial; flowering in July and August.

This plant, there is reason to fear, is now become extinct in our country. We, however, still retain it, as it may, like some other plants, after having been lost for some years, again make its appearance; and as there cannot be much fear of its ever having been mistaken for any other plant, we think that it may again be found. It is frequent on the shores of the Mediterranean sea, and from specimens grown on the Italian coast our figure has been drawn and described. The root, as well as the whole plant, has a strong smell, similar to that of Parsnips. It is a singularly rigid plant in appearance, and very remarkable in structure, especially the parts of the flower and seed.

GENUS LXXXVII. CONIUM.—LINN. *Hemlock*.

GEN. CHAR. *Calyx* an obsolete margin. *Petals* obcordate, with a very small inflexed point. *Fruit* laterally compressed, ovate. *Carpels* with five equal prominent waved or crenated *ridges*, the lateral ones forming the margin. *Channels* with numerous streaks, but no *vittæ*. *Albumen* with the sides rolled inwards. *General involucre* of few segments, the *partial* of three on one side.—Name *κωνιιον*, from *κωνος*, a *cone*, or *top*; so called because the juice of the plant produces a giddy or whirling sensation, as that caused by turning round, as does a top.

1. *C. macula'tum*, Linn. (Fig. 475.) *common Hemlock*. Stem smooth, spotted, much branched; partial involucre with the short segments on the outer side of the umbel.

English Botany, t. 1191.—English Flora, vol. ii. p. 65.—Hooker, British Flora, vol. i. p. 139.—Lindley, Synopsis, p. 126.

Root tapering, fleshy, mostly branched and fibrous, *Stem* erect, from three to six feet high, round, hollow, smooth, glaucous green, spotted with purple, striated, sometimes furrowed, much branched upwards, and leafy. *Leaves* large, thrice pinnate, on a round striated hollow spotted footstalk, with a thin dilated striated sheathing base, and a pale thin membranous margin, elongated at the upper angles into acute appendages, leaflets ovate-lanceolate, cut in a pinnatifid manner, and serrated, a deep shining green above, pale beneath, quite smooth. *Umbels* lateral and terminal, numerous, the *general* of nu-

merous long slender nearly equal striated *rays*, the *partial* of numerous short unequal ones. *General involucre* of several ovate-lanceolate segments, with long slender points, the *partial* of three similar segments, reflexed on the outer side of the umbels. *Flowers* numerous, white, nearly regular. *Calyx* an obsolete margin. *Petals* obcordate, with a very small inflexed point, the outer ones of the outer flowers somewhat larger than the others. *Stamens* with slender *filaments* and small roundish white *anthers*. *Styles* very short, with small capitate *stigmas*, and the *disk* oblong, pale yellow, somewhat convex. *Fruit* ovate, the sides compressed, crowned by the waved disk. *Carpels* with five equal pale acute prominent crenated *ridges*, the lateral ones forming the margins. *Channels* smooth, with several stria, but without *vittæ*. *Albumen* rounded at the back, the margins rolled inwards.

Habitat.—Waste places, on the banks of rivers, woods and shady places; not unfrequent.

Perennial; flowering in June and July.

Hemlock, or Cicutæ, contains an active narcotic acrid principle, which, in proper doses, is a valuable and useful medicine, acting as a sedative and alterative, and has been found of considerable use in the relief of scirrhus and cancerous affections, by relieving the pain and allaying the irritability, and is taken either internally, or applied externally in the form of poultice, made with bread in the common way, and the dried powdered leaves mixed with it; and for internal exhibition, the leaves gathered from good plants just before they come into flower, carefully dried, and kept in a close stopped bottle, is perhaps the best form to secure the preservation of its properties. It is also prepared in the form of an extract, but generally this is so carelessly made as to retain but little of its original activity; if, however, the expressed juice is evaporated at a very low heat in the sun, it retains for a considerable period, if kept in close vessels, all its virtues. The leaves made into warm fomentations we have also seen of considerable use in promoting the healing process of various irritable ulcers. Fatal accidents have sometimes occurred, from the Hemlock having been mistaken for other plants; as in a short time it produces giddiness, headache, stupor, delirium, coma, convulsions, and death. It is generally believed to have been the juice of Hemlock, which was used in former times, and especially among the Greeks, for despatching criminals; we are, however, in want of precise information as to this being the only poison used; indeed the accounts of the activity of their poison would lead to the supposition that it was a compound, and contained more powerful ingredients. It was, however, the opinion of Linnæus and Lamarck, that the poisonous draught was that of Hemlock.

Hemlock is spoken of in Scripture (Hosea, ch. x., v. 4, and in Amos, ch. vi., v. 12,) as a thing to be feared, something that appears to have been familiar to the people of those times, and what was looked

upon by no means as pleasant or agreeable ; but upon referring to the original Hebrew, we do not find any thing definitely spoken of ; the word means something bitter and unpleasant, and authors are very varied in their opinion as to its signifying Hemlock or not : there appears, indeed, reason to believe that it may have been Wormwood (*Absinthium*), and some think it to have been (*Lolium temulentum*) Darnel, see page 165.

SUB-ORDER 3. COELOSPERMÆ. *Albumen* hemispherical, or saccato-concave.

TRIBE 10. CORIANDRÆ.—Koch. *Fruit* globose or double, being formed of two globose carpels. *Carpels* with five primary *ridges*, depressed, waved, or in the form of an obscure furrow, the lateral one placed before the accessory margin ; the four secondary ridges more prominent, but not winged. *Albumen* hemispherical, concave in front.

GENUS LXXXVIII. CORIAN'DRUM.—LINN. *Coriander*.

GEN. CHAR. *Calyx* margin of five teeth. *Petals* obcordate, with an inflexed point, the outer ones larger, and bifid. *Fruit* globose. *Carpels* with five primary depressed waved *ridges*, the lateral ones placed before an accessory margin, the four secondary ones more prominent and carinated. *Channels* without *vittæ* ; the commissure with two *vittæ*. *Albumen* concave in front, covered with a loose membrane. *General involucre* mostly wanting, the *partial* on one side.—Name from κοριον, or κοριαννον.

1. *C. sativum*, Linn. (Fig. 476.) *Common Coriander*. Leaflets of the lower leaves wedge-shaped, those of the upper linear.

English Botany, t. 67.—English Flora, vol. ii. p. 67.—Hooker, British Flora, vol. i. p. 140.—Lindley, Synopsis, p. 115.

Root small, tapering. *Stem* erect, from one to two feet high, round, smooth, striated, branched and leafy, the lower *leaves* on long slender channeled footstalks, bi-pinnated, the leaflets broadly wedge-shaped, mostly deeply three-cleft, cut and deeply serrated or toothed, the upper leaves gradually becoming larger, more compound, with shorter footstalks, and long narrow linear segments, all quite smooth, of a pale shining green. *Umbels* lateral and terminal, of from three to five *rays*, the lateral ones sessile, or on footstalks, the *partial* umbels of numerous short unequal rays. *Flowers* white or pale pink, the outer ones radiant. *Calyx* of five narrow lanceolate teeth. *Petals* inversely heart-shaped,

with a small inflexed point, the outer ones of the radiant flowers much larger than the others, and deeply cleft. *Stamens* with slender *filaments* and oblong *anthers*. *Styles* elongating after flowering, slender, spreading. *Stigmas* small, capitate. *Disk* somewhat conical. *Fruit* globose, quite smooth.

Habitat.—Fields and waste places, especially in the South of England; naturalized.

Annual; flowering in June.

This is the only known species of the genus; it is found in various places, but not really wild. It is well known as affording warm aromatic seeds, and was formerly cultivated; hence it has escaped, and is now naturalized. The whole plant in a fresh state has a disagreeable odour, but the dried ripe seeds have a grateful smell, are aromatic and carminative, with a degree of pungency, and are used in compounding some medicines to cover their less agreeable taste and unpleasant effects. They are used in making some kinds of sweet bread, confectionery, and pastry, and also as a condiment in various ways in the South of Europe; while in Peru we are informed by Feuillée, they are used to an unpleasant excess in almost all their dishes.

GENUS LXXXIX. CHENOPO'DIUM.—LINN. *Goosefoot*.

Nat. Ord. CHENOPO'DEÆ. VENT.

GEN. CHAR. *Perianth* single, inferior, five-cleft, persistent, and unaltered, closing over the fruit. *Fruit* a thin depressed utricle, containing a single polished seed.—Named from $\chi\eta\nu$, $\chi\eta\nu\sigma$, a *Goose*; and $\pi\omicron\upsilon\varsigma$, a *foot*; from the shape of the leaves, of some species, resembling a goose's foot.

* *Leaves* semi-cylindrical; *flowers* with *bractees*.

1. *C. fruticosum*, Schrad. (Fig. 477.) *Shrubby Sea-side Goosefoot*. Stem shrubby; leaves semi-cylindrical, acute; flowers in the axis of the leaves, of five fleshy acute segments; seeds smooth.

Hooker, British Flora, vol. i. p. 141.—Lindley, Synopsis, p. 216.—*Salsola fruticosa*, Linn.—English Botany, t. 635.—English Flora, vol. ii. p. 18.

A small bushy *shrub*, about three feet high, erect, with numerous slender branches, very leafy, the bark pale, striated. *Leaves* arising on all sides, succulent, semi-cylindrical, smooth, with an acute point, a somewhat glaucous green, sessile. *Flowers* small, sessile, one, two, or three together in the axis of the leaves, each having two or three lanceolate pale membranous *bractea* at the base; the *perianth* of five



477

Chenopodium fruticosum.



478

Chenopodium maritimum.



479

Chenopodium oldidum.



480

Chenopodium polyspermum.



481

Chenopodium bonus henricus.



482

Chenopodium urbicum.

broadly acute somewhat fleshy spreading segments, pale on the margin. *Stamens* on slender *filaments*, opposite the segments, and as long, or rather longer. *Anthers* yellow, rather large, of two spreading lobes. *Styles* two, sometimes three, combined at the base. *Fruit* imbedded in the unchanged perianth. *Seed* black, almost kidney-shaped, smooth, with the lobes of the embryo somewhat rolled inwards.

Habitat.—Sea coast, but rare. In Norfolk, Suffolk, Dorsetshire, Devonshire, and Cornwall.

Shrub; flowering in July and August.

2. *C. maritimum*, Linn. (Fig. 478.) *Annual Sea-side Goosefoot*. Stem spreading, herbaceous; leaves semi-cylindrical, acute; flowers in the axis of the leaves, of five fleshy acute segments; seeds dotted.

English Botany, t. 633.—English Flora, vol. ii. p. 16.—Hooker, British Flora, vol. i. p. 141.—Lindley, Synopsis, p. 216.—*Schoberia maritima*, Meyer.

Root small, tapering, branched, and fibrous. *Stems* herbaceous, mostly several, erect, from four to six or eight inches high, branched; frequently it is much branched from the base, and spreading around, slender, leafy. *Leaves* numerous, alternate, fleshy, smooth, a glaucous green, semi-cylindrical, somewhat tapering upwards with an acute point, about an inch long. *Flowers* axillary, one, two, or three, small, sessile, each having two small pale membranous ovate *bractea* at the base. *Perianth* of five ovate acute segments, pale on the margins, fleshy. *Stamens* opposite the segments, with filaments about the same length, and with smallish yellow *anthers*. *Styles* two. *Fruit* imbedded in the unchanged perianth. *Seeds* orbicular, shining black, minutely dotted.

Habitat.—Sea shore in sandy or muddy places; frequent.

Annual; flowering in June or July.

The leaves have a saline taste, and like most other maritime plants afford, when burnt, an alkaline salt, used for the making of glass, soap, &c.

**** Leaves plane, undivided; flowers without bracteas.**

3. *C. o'lidum*, Curtis, (Fig. 479.) *Stinking Goosefoot*. Stem spreading; leaves entire, ovato-rhomboid; flowers in dense clustered leafless spikes; seeds shining, very finely dotted.

English Botany, t. 1034.—English Flora, vol. ii. p. 14.—Hooker, British Flora, vol. i. p. 141.—Lindley, Synopsis, p. 215.—*C. Vulvaria*, Linn.

Root small, tapering, with branched fibres. *Stems* several, with long spreading straggling branches, or prostrate, roundish, striated, and covered like the rest of the plant with a hoary mealiness, greasy to the touch. *Leaves* numerous, small, on longish slender footstalks, entire, ovate, acute, or more or less rhomboid, paler on the under side,

with a mid-rib, and more mealy than the upper. *Flowers* very small, in roundish oblong clusters, or small dense spikes, on short stalks, arranged in leafless racemes. *Perianth* of five lanceolate segments, rough, with mealiness, each with a green mid-rib. *Stamens* on slender *filaments*, rather longer than the perianth, with small roundish two lobed yellow *anthers*. *Styles* short, spreading. *Fruit* surrounded by the persistent perianth. *Seed* shining black, closely invested by a thin pale brown membrane, its testa very finely dotted, hard and crustaceous, roundish, with the sides flattened.

Habitat.—Waste places, especially rubbishy places near the sea.

Annual; flowering in August.

The whole plant when bruised exhales an extremely nauseous odour, something like that of putrid salt fish. It was much used at one time in nervous and hysterical complaints, and supplies of it were always to be obtained in Covent Garden Market; but it is now superseded by other and more convenient medicines. Messrs. Chevalier and Las-seigne detected in this plant a quantity of ammonia, which is combined with a portion of oil and resinous matter, on which depends the intolerable odour exhaled by the plant.

4. *C. polyspermum*, Linn. (Fig. 480.) many seeded Goosefoot. Leaves ovate, entire, quite smooth; racemes elongated, leafless; perianth spreading when in fruit; seeds shining, very finely dotted.

Hooker, British Flora, vol. i. p. 141.

α. *cymoso-racemosum*. Stems all prostrate; leaves obtuse; flowers in a compound leafless cymose-raceme.

C. polyspermum. English Botany, t. 1480.—English Flora, vol. ii. p. 15.—Lindley, Synopsis, p. 216.

β. *spicato-racemosum*. Stem erect; leaves acute; flowers leafless, in a spicate raceme.

C. acutifolium, Smith. English Botany, t. 1481.—English Flora, vol. ii. p. 15.—Lindley, Synopsis, p. 216.—*C. polyspermum*, Curtis.

Root tapering, branched, and fibrous. *Stem* erect, branched, and spreading, or prostrate on the ground, leafy, roundish, or angular and striated, varying from six to twenty inches in length, a smooth palish green. *Leaves* alternate, on slender footstalks, smooth, paler beneath than above, with a mid-rib and slender branched veins, ovate, ovate-oblong, acute, almost lanceolate, sometimes obtuse or roundish, but generally with a fine or bristly point. *Flowers* very small, crowded in small clusters, disposed on slender stalks, in more or less spicate or racemose racemes, leafless, or sometimes with one or two small leaves amongst them, one, two, or three racemes arising from the axis of the leaves, and are either erect or spreading. *Perianth* of five ovate-oblong or acute short segments, green, with pale membranous edges. *Stamens* with awl-shaped *filaments*, as long as the segments, and small yellow

roundish two lobed *anthers*. *Styles* very short. *Fruit* closely invested with a pale brown thin membrane in the centre of the spreading segments of the perianth. *Seed* shining black, its testa hard, crustaceous, very finely dotted, a roundish kidney shape, the sides flattened.

Habitat.—Waste places amongst rubbish ; in Cornwall, rare.

Annual ; flowering in August and September.

. *Leaves* plane, toothed, angled, or lobed ; *flowers* without bracteas.

5. *C. Bonus Henri'cus*, Linn. (Fig. 481.) *Mercury* Goosefoot, or good *King Henry*. *Leaves* triangular, arrow-shaped, mostly entire ; spikes compound, terminal and axillary, erect, leafless ; perianth of the fruit dry ; seed kidney-shaped, very finely dotted.

English Botany, t. 1033. - English Flora, vol. ii. p. 10.—Hooker, British Flora, vol. i. p. 142.—Lindley, Synopsis, p. 216.—*Blitum*, *Bonus Henricus*, Meyer.

Root fleshy, branched. *Stem* erect, from one to two feet high, roundish, furrowed, smooth, or somewhat mealy, especially towards the end of the branches, and the under side of the leaves simple or slightly branched, leafy. *Leaves* on channeled footstalks, dilated a little at the base with a membranous margin, large, dark green, pale on the under side, triangular, with large spreading lobes at the base. *Flowers* small, numerous, green, densely crowded in oblong clusters into a compound spike, terminating the stem and branches, leafless, or with one or two on the lower part, which are ovate-lanceolate, the terminal spike mostly large, conical. *Perianth* of five spreading ovate-oblong segments, green, with a pale thin membranous margin, terminating near the point abruptly. *Stamens* on slender awl-shaped *filaments*, about as long as the perianth. *Anthers* yellow, ovate, of two lobes. *Styles* filiform, spreading, elongating after flowering. *Fruit* closely invested with a very thin pale brown membrane, crowned by the persistent styles, and surrounded at the base with the dried perianth. *Seed* roundish, kidney-shaped, dark brown, very finely dotted, smooth, shining.

Habitat.—Waste places and road sides ; frequent.

Perennial ; flowering in July and August.

The whole plant is insipid and inodorous. The young leaves are used in some places instead of Spinach, for which they are a good substitute ; formerly it was much more used than it is now. The leaves are considered emollient, and are used to make a decoction for *enemas* ; and the country people account them a good application to flesh wounds and sores, from the idea that they are drawing and healing.

6. *C. ur'bicum*, Linn. (Fig. 482.) *upright* Goosefoot. *Leaves* shining, triangular at the base, slightly lengthened on the petiole, toothed or sinuated ; spikes long, erect, almost simple, nearly leafless ; seeds smooth, roundish.

α. Leaves with short triangular acute teeth.

C. urbicum, *De Cand.*—*C. melanospermum*, *Wallr.*

β. intermedium, (Fig. 483.) Leaves sinuato-deantatis; teeth triangular, lanceolate, acuminate.

C. intermedium, *De Cand.*—*C. urbicum*.—English Botany, t. 717.—English Flora, vol. ii. p. 10.—Hooker, British Flora, vol. i. p. 142.—Lindley, Synopsis, p. 215.

Root fibrous. *Stem* erect, scarcely branched, angular, furrowed, smooth, or somewhat mealy, from one to one and half feet high, green, or often of a reddish hue, leafy. *Leaves* on channeled footstalks, slightly dilated at the base, triangular, acute, more or less wedge-shaped at the base, and the margins more or less deeply sinuated and toothed in an irregular manner, of a light almost glaucous green, paler beneath, with a mid-rib and lateral veins. *Flowers* small, in crowded globular clusters, more or less distant, on a common stalk, in a spicate manner. *Spikes* terminal and axillary, erect, straight, shorter than the leaves, approaching nearer the stem as they advance to maturity, almost leafless, the terminal spike more branched than the others. *Perianth* of five roundish ovate obtuse or slightly acute segments, pale green, with lighter coloured margins. *Stamens* with stout filaments, scarcely the length of the perianth and yellow two celled anthers. *Styles* short, two or three sometimes wanting. *Fruit* roundish, closely invested with a pale thin membrane, and crowned by the persistent styles. *Seeds* dark brown, smooth, or with the appearance of being very finely dotted, shining, almost as big as rape seed, much larger than the following species.

Habitat.—Waste rubbishy places under walls, &c., about towns and villages.

Annual; flowering in August and September.

7. *C. ru'brum*, *Linn.* (Fig. 484.) *Red Goosefoot.* Leaves rhombotriangular, toothed and sinuated; spikes erect, compound, and leafy; seeds very small, smooth, roundish.

English Botany, t. 1721.—English Flora, vol. ii. p. 11.—Hooker, British Flora, vol. ii. p. 142.—Lindley, Synopsis, p. 215.—*Blitum rubrum*, *Reich.*

Root fibrous. *Stem* erect, round, smooth, branched, and leafy, from one to two feet high, mostly of a reddish colour, sometimes green, and more or less striated or furrowed. *Leaves* on longish channeled footstalks, scarcely dilated at the base, of a shining green, paler beneath, with a stout mid-rib and lateral branched veins, the upper ones occasionally slightly mealy, triangular, with a wedge-shaped base and acute point, the margins coarsely toothed and sinuated, generally with one larger tooth than the rest on the lower part on each side, hence sometimes hastate or tri-lobate. *Flowers* small, greenish yellow, in densely crowded oblong clusters, in long leafy very compound terminal and



483 *C. urbicum* var. *intermedium*.



484 *Chenopodium rubrum*.



485 *Chenopodium glaucum*.



486 *Chenopodium botryodes*.



487 *Chenopodium murale*



488 *Chenopodium hybridum*.

lateral *spikes*, intermixed with small lanceolate toothed or simple leaves. *Perianth* very small, of five ovate scarcely acute segments. *Stamens* with slender *filaments*, longer than the perianth, with small two lobed *anthers*. *Fruit* very small, like grains of sand, surrounded by the dried perianth. *Seed* smooth, shining, enveloped in a very thin pale membrane.

Habitat.—Dunghills, under walls, and waste places; not uncommon. Annual; flowering in August and September.

In drying, the alkaline salt contained in the juices of the plant crystalizes with a white frosted appearance upon the stem and petioles. The flowers on the lateral parts of the spikes are frequently with segments only having three divisions, and also with only three stamens, while those on the top and upper parts have five segments and stamens.

8. *C. glaucum*, Linn. (Fig. 485.) *Oak-leaved Goosefoot*. Leaves ovate-oblong, obtuse, or oblong, with the margin distantly toothed, somewhat hastate, glaucous and mealy beneath; spikes compound, leafless; seeds minutely dotted.

English Botany, t. 1454.—English Flora, vol. ii. p. 14.—Hooker, British Flora, vol. i. p. 143.—Lindley, Synopsis, p. 215.—*Blitum glaucum*, Koch.

Root fibrous. *Stem* from a few inches to two feet long, mostly prostrate, simple or branched, spreading, stout, furrowed, leafy. *Leaves* alternate, on short stout channeled footstalks, oblong, with an acute point, or oblong-ovate, obtuse, the margin distantly toothed, with two teeth larger than the others near the base, a glaucous green above, sometimes purplish, white and mealy beneath. *Flowers* small, in dense close clustered branched *spikes*, both terminal and lateral, leafless, or with two or three leaves at the base. *Perianth* of five small smooth obtuse segments. *Stamens* with short *filaments* and yellow two lobed *anthers*. *Styles* very short. *Fruit* roundish, flattened, covered with a thin membrane, and crowned by the persistent styles. *Seeds* smooth, shining, purplish black, very minutely dotted.

Habitat.—Waste ground, especially on a sandy soil; about London, and apparently not very common elsewhere.

Annual; flowering in August.

9. *C. Botryodes*, Sm. (Fig. 486.) *Many spiked Goosefoot*. Leaves triangular, somewhat toothed, slightly lengthened at the base on the petiole; spikes erect, compound, and leafy; seed small, shining.

English Botany, t. 2247.—English Flora, vol. ii. p. 11.—Hooker, British Flora, vol. i. p. 142.—Lindley, Synopsis, p. 215.

Root fibrous. *Stem* spreading, or prostrate, mostly branched from the base, slightly angular, furrowed, smooth, leafy, of a greenish purple colour. *Leaves* on short footstalks, rather small, triangular, with an

almost entire margin, more or less tapering at the base on the petiole, the upper ones smaller, more blunt, at the angles becoming almost lanceolate, paler on the under side, with a mid-rib, mostly of a purplish colour, and slender branched veins. *Flowers* small, in crowded oblong clusters, more or less distant on the terminal and axillary somewhat leafy spikes, of a green purplish colour. *Perianth* of five oblong slightly swelling segments. *Stamens* on slender *filaments*, longer than the perianth. *Anthers* small, yellow. *Styles* very short, two spreading. *Fruit* roundish, compressed. *Seed* small, black, and shining, enclosed in a thin pale membrane, crowned by the persistent styles, and enveloped with the dried perianth.

Habitat.—Moist sandy places near the sea. Yarmouth, Norfolk.—*Mr. Wigg*. Cliffs by the sea, at Lowestoft.—*Sir J. E. Smith*. Shore at South Shobury.—*Mr. E. Forster*.

Annual; flowering in August and September.

This species is nearly allied to *C. rubrum*, but is much smaller, of a more fleshy texture, and the margins of the leaves less toothed. It is quite a different plant from the *C. Botrys*, of Linn., which is clothed with glandular hairs, the leaves oblong, deeply sinuated, and obtusely toothed, and is not a native of this country.

10. *C. murale*, Linn. (Fig. 487.) *Nettle-leaved Goosefoot*. Leaves ovate, approaching rhomboid, shining, acutely toothed; flowers in leafless much branched cymose spikes; seeds grey, finely dotted, surrounded with a carinated margin.

English Botany, t. 1722.—English Flora, vol. ii. p. 11.—Hooker, British Flora, vol. i. p. 142.—Lindley, Synopsis, p. 215.

Root fibrous. *Stem* erect, from one to three feet high, branched from the base upwards with short spreading alternate branches, roundish, smooth, striated, or somewhat furrowed, of a darkish slightly glaucous green, often with a purplish hue, as well as the branches. *Leaves* numerous, alternate, on rather long channeled footstalks, ovate, approaching a rhomboid figure, with sharp irregular hooked teeth, occasionally sinuated, the point generally long and attenuated, paler and more glaucous on the under side, with three ribs from the base, which are branched upwards. *Flowers* in close small clusters, of a palish green colour, arranged irregularly on slender much branched and spreading cymose spikes, which are numerous, terminal and axillary, leafless, each on a slender footstalk. *Perianth* of five ovate obtuse green segments, with a mid-rib and a pale narrow white membranous margin. *Stamens* on slender *filaments*, longer than the perianth, with yellow ovate *anthers*. *Fruit* roundish, much compressed, partly enveloped in the dried perianth, which closely embraces it. *Seed* greyish, finely dotted, roundish, much compressed, surrounded with a carinated margin like a ring, and enclosed in a pale thin membrane.

Habitat.—Under walls, in waste places, and road sides ; frequent.
Annual ; flowering in August and September.

This is readily distinguished from the other species, especially by the colour and shape of its curious seeds. The whole plant when bruised has an unpleasant fœtid smell.

11. *C. hybrid'um*, Linn. (Fig. 488.) *Maple-leaved Goosefoot*. Leaves heart-shaped, with angular teeth and an acuminate point ; flowers in much spreading branched leafless cymose spikes ; seeds large, black, deeply dotted.

English Botany, t. 1919.—English Flora, vol. ii. p. 12.—Hooker, British Flora, vol. i. p. 142.—Lindley, Synopsis, p. 215.

Root fibrous. *Stem* erect, rather slender, mostly with spreading branches, from one to two feet high, round, or angular, smooth, green, with yellowish or purple lines. *Leaves* alternate, on short channeled footstalks, thickened at the lower part, large, bright green, spreading, heart-shaped, or broadly ovate, with a lengthened point, and about three angular teeth on each side towards the base, the upper ones almost or quite entire, ovate-lanceolate, paler on the under side, with a stout mid-rib and lateral branched veins. *Flowers* green, scattered on the spreading numerous branches of the terminal and axillary cymose spikes, the flowers are sometimes solitary, but mostly there are two or three together along the branches. *Perianth* of five spreading ovate segments, palish green, mostly with a narrow pale membranous margin. *Stamens* on slender filaments, longer than the perianth. *Anthers* yellow, small. *Fruit* roundish, much compressed, partly enveloped in the dried perianth. *Seed* large, shining black, much compressed, marked with irregular large deep pitted dots or furrows, and enclosed in a thin pale membrane.

Habitat.—Moist waste places ; rare. About London, Ipswich, Colchester, Dedham, Ely, and Edinburgh.

Annual ; flowering in August.

12. *C. alb'um*, Linn. (Fig. 489.) *White Goosefoot*. Leaves ovate, approaching to rhomboid, eroded and toothed, entire at the base, the upper ones oblong, entire ; spikes branched, somewhat leafy ; seeds smooth and shining.

English Botany, t. 1723.—English Flora, vol. ii. p. 13.—Hooker, British Flora, vol. i. p. 143.—Lindley, Synopsis, p. 215.

α. *spicatum*. Leaves eroded and toothed ; flowers in crowded spikes.

β. *cymigerum*, (Fig. 490.) Leaves entire, or sparingly toothed ; flowers in elongated branched spreading spikes.—*C. viride*, Linn.

Root branched and fibrous. *Stem* more or less erect, much branched mostly from the base, and spreading, from one and half to three feet high, round, or somewhat angular and furrowed, striated with palish yellow lines, or reddish, covered like the rest of the plant with a white

mealiness, having a soft unctuous feel. *Leaves* numerous, three ribbed from the base, and branched, alternate, on rather long channeled footstalks, very variable in size and width, mostly ovate or ovate-oblong, with an acute point, and tapering at the base down the footstalk, and one or two large angular teeth on each side, giving it a rhomboid shape, and above these the margin is more or less irregularly eroded and toothed, the upper ones are ovate-oblong, or ovate-lanceolate, entire, and in the variety *β. cymigerum*, they are almost all entire, or only slightly and irregularly toothed, smaller, narrower, and generally more green; the stem also is more branched from the base, and spreading. *Flowers* very numerous, terminal and axillary, green, in densely crowded oblong clusters, in long branched somewhat leafy *spikes*, in *β. cymigerum* they are much more branched and spreading, less leafy, and on longer stalks, in a somewhat cymose manner. *Perianth* in five ovate acute segments, with a broad pale margin and green mid-rib. *Stamens* about the length of the perianth, with roundish ovate *anthers*. *Styles* short spreading. *Fruit* roundish, compressed, enclosed in the dried perianth. *Seed* roundish, kidney-shape, black, smooth, and shining, appear to be very finely dotted, enclosed in a pale thin membrane.

Habitat.—Waste places, dunghills, &c.; very common.

Annual; flowering in August.

This is a very common and very variable species, especially in the size and shape of the leaves. With attention, however, to the above descriptions, we do not think much difficulty will be found in recognizing it. The whole plant is insipid and inodorous, and has been used as a substitute for the cultivated Spinach.

13. *C. ficifolium*, Smith. (Fig. 491.) *Fig-leaved Goosefoot*. Leaves ovate-oblong, with ovate-oblong lanceolate obtuse teeth, the lower ones sub-trilobate and toothed, the upper linear, lanceolate, entire; flowers in nearly leafless cymose spikes; seed smooth, shining, with pitted dots.

English Botany, t. 1724.—English Flora, vol. ii. p. 13.—Hooker, British Flora, vol. i. p. 143.—Lindley, Synopsis, p. 214.

Root branched, fibrous. Whole plant less glaucous and powdery than the above. *Stem* erect, branched, and spreading, about two feet high, green, purplish at the base, roundish, or angular and furrowed, with pale yellowish lines, sometimes present. *Leaves* numerous, alternate, on channeled footstalks, purplish at the base, paler beneath, with a mid-rib and branched veins, the lower ones somewhat three lobed in a hastate manner, and with irregular teeth, tapering at the point, and elongated at the base down the footstalk, the upper ones linear lanceolate, quite entire, while the intermediate ones are oblong lanceolate, obtusely toothed, one or two at the base on each side larger than the others. *Flowers* green, in crowded oblong clusters, in terminal and axillary almost leafless branched *spikes*. *Perianth* in five oblong



489

Chenopodium album.



490

Chenopodium cymigerum.



491

Chenopodium ficifolium.



492

Beta maritima.



493

Salsola kali.



494

Herniaria glabra.

acute segments, green, with a pale thin membranous margin. *Stamens* shorter than the perianth, with small oblong yellow *anthers*. *Fruit* roundish, compressed, enclosed in the dried perianth. *Seed* roundish, kidney-shaped, black, shining, with numerous small irregular deep pitted dots.

Habitat.—Waste places, dunghills, &c.; not common. About London and Yarmouth.

Annual; flowering in August and September.

Readily distinguished from *C. album*, by its dotted seeds, to which it is nearly allied in the shape of its leaves, and the whole habit of the plant.

GENUS XC. BE'TA.—LINN. *Beet.*

Nat. Ord. CHENOPO'DÆE. VENT.

GEN. CHAR. *Perianth* single, half inferior, five-cleft, persistent. *Stamens* inserted into the fleshy top of the germen. *Fruit* kidney-shaped, enveloped in the capsular base of the calyx. *Seed* with a coriaceous covering. *Flowers* two or three, united at the base.—Name from the Celtic word *bett*, according to Théis, which means red; others suppose it to come from the Greek word *εὐλον*, *bietola*.

1. *B. maritima*, Linn. (Fig. 492.) *Sea Beet*. Stem procumbent at the base; flowers sessile, solitary, or in pairs in the axis of the leaves of the spike; segments of the calyx entire; leaves ovate, obtuse.

English Botany, t. 285.—English Flora, vol. ii. p. 17.—Hooker, British Flora, vol. i. p. 143.—Lindley, Synopsis, p. 216.

Root large, thick, tapering, fleshy, black externally, white within. *Stem* procumbent at the base, from one to two feet high, angular, furrowed, green, with reddish longitudinal lines, branched and leafy. *Leaves* of a dark green, succulent, entire, with a waved margin, stout mid-rib, and branched veins, those arising from the root and lower part of the stem large, ovate, obtuse, spreading, on channeled foot-stalks, dilated at the base, those of the stem nearly sessile, alternate, waved, and somewhat lanceolate. *Flowers* small, greenish, sessile, one or two together in the axis of the small leaves of the *spikes*, which are long, numerous, terminal and lateral. *Perianth* single, of five spreading obtuse segments, inserted about the middle of the germen. *Stamens* five, on short awl-shaped *filaments*, about as long as the perianth, inserted into the fleshy ring surrounding the germen. *Anthers* ovate, of two cells, yellow. *Styles* two, occasionally three, very short. *Fruit* kidney-shaped, imbedded in the fleshy capsular base of the calyx. *Seed* horizontal, covered with a leathery coat, two

or three in the *germen*, which mostly becomes granulated, and reddish or purple.

Habitat.—Sea shore, especially in a muddy soil; not unfrequent.

Perennial; flowering in August,

This species is regarded by some authors as a variety of *B. vulgaris*, from which it seems to differ only in having two or three flowers together instead of three or four; and Smith observed that according to Linnæus the keel of the calyx is entire, which is not so in *B. vulgaris*.

Several varieties of Beet are cultivated for various purposes. The common garden Beet is a well known vegetable; its leaves are eaten in the Spring like Spinach, and the stems and mid-ribs of the leaves are blanched by earthing them up, and make an excellent delicate dish used as chard; the roots are a fine dark colour, and are used in salads, soups, &c., and with vinegar form a good and beautiful pickle, much used in ornamenting side dishes, &c. Another kind is commonly known by the name of *Mangel Wurzel*, a root of scarcity. This plant is now cultivated in many parts of the country to a considerable extent, and is an excellent winter provender for sheep and cattle; its root, which is the part of the plant for which it is chiefly grown, yields an abundance of nutriment, from the great quantity of saccharine matter which it contains. It is surprising to what a large size the roots by being grown in a deep rich soil will attain, their weighing from twenty to thirty pounds is not an uncommon size, but sometimes they have been grown to near sixty pounds. These roots made into poultices are considered a better and a more useful application to irritable ulcers than those of carrots. The cultivation of the Beet is far more important in France than with us, for from its roots nearly the whole of the sugar which they consume is obtained; for this purpose the white Sicilian Beet is preferred, from its containing the greatest portion of saccharine matter. Although great improvements have been made in the preparation of the Beet sugar, it is not considered near so good as that obtained from the cane. The dried roots of Beet, after the juice has been for the most part extracted from them, used in the same way as malt, are said to make a good and wholesome kind of beer; and the dark red coloured roots are not unfrequently employed to heighten the colour of claret wine.

GENUS XCI. SAL'SOLA.—LINN. *Salt-wort*.

Nat. Ord. CHENOPO'DEÆ. VENT.

GEN. CHAR. *Perianth* single, inferior, five-partite, persistent, the segments after flowering producing from the back a transverse

appendage. *Stamens* inserted into the base of the perianth.

Fruit a depressed membranous *utricle*. *Seed* solitary, with a membranous covering. *Embryo* spiral.—Name from *Sal*, salt.

1. *S. Kali*, Linn. (Fig. 493.) *Prickly Salt wort*. Stem herbaceous, prostrate, with spreading branches; leaves rough, awl-shaped, with a spinous point; flowers axillary, solitary; perianth of the fruit cartilaginous.

English Botany, t. 634.—English Flora, vol. ii. p. 18.—Hooker, British Flora, vol. i. p. 143.—Lindley, Synopsis, p. 214.

Root of numerous branched fibres. *Stems* numerous, prostrate, with spreading branches, from six to twelve inches long, roundish, furrowed or striated, with green and yellow longitudinal lines, rough, with short thick hairs, frequently almost smooth at the base, and sometimes almost entirely so, except the ends of the branches. *Leaves* alternate, numerous, awl-shaped, fleshy, angular, channeled above, with a mid-rib and obtuse margins, except at the base, where it is somewhat dilated, with pale narrow membranous entire or toothed margins; the point terminating in a sharp hard rigid cartilaginous spine, pale, smooth, and shining, especially when dry. *Flowers* solitary, sessile, in the axis of the leaves from the base upwards, of a pale pink or white, and with mostly three leaf-like bracteas as the base of each. *Perianth* of five deep ovate acuminate segments, converging over the centre of the flower, each three ribbed, and at the back about the middle a transverse prominence, which after flowering dilates into a thin roundish cartilaginous appendage, with a thin pale jagged membranous margin, and vein-like ramifications branching into it; this appendage spreads around, while the points of the segments above it closely converge over the fruit. *Stamens* on slender *filaments*, longer than the perianth, with rather large ovate *anthers*, yellow. *Styles* two, sometimes three, short, united at the base. *Stigmas* spreading. *Fruit* a thin depressed pale brown membranous *utricle*, enveloped in the perianth, and crowned by the persistent styles. *Seed* solitary, roundish, compressed, almost flat, its pericarp membranous, pale brown, finely dotted, without albumen, the *embryo* of two spiral lobes.

Habitat.—Sandy sea shores; frequent.

Annual; flowering in July.

Saltwort is one of the plants grown on the sea coast and small islands in various parts of Europe, especially on the coast of Spain, and various other parts of the Mediterranean, and burned for the soda which it contains, which is known in the unwashed state, combined with the ashes of the plant, under the name of barilla; but within the last few years, the improvements made by the chemical manufacturers are such as to convert various kinds of their refuse, after being employed in the making of other articles, and especially the Muriate of Soda (common salt), after having being used in the process of making

chlorine gas in the manufacturing of chloride of lime, is readily made into carbonate of soda, and at a much lower price than it can be afforded for by the former process of making it from Salsola and other like plants: consequently its growth is now much less attended to than formerly.

GENUS XCII. HERNIARIA.—LINN. *Rupture-wort.*

Nat. Ord. PARONY'CHIEÆ. ST. HIL.

GEN. CHAR. *Calyx* five-partite, slightly coloured within, persistent. *Stamens* five, alternating with five filiform entire *petals*, sometimes wanting. *Styles* very short, or wanting. *Stigmas* obtuse. *Capsule* membranous, indehiscent, single seeded, covered by the calyx. —Named from the supposed use of the plants in the cure of *Hernia*.

1. *H. gla'bra*, Linn. (Fig. 494) *smooth Rupture-wort*. Leaves elliptic, oblong, attenuated at the base, smooth; flowers about ten, in crowded axillary clusters; calyx smooth.

English Botany, t. 206.—English Flora, vol. ii. p. 8.—Hooker, British Flora, vol. i. p. 144.—Lindley, Synopsis, p. 61.

β. *hirsuta*. Stem, leaves, and calyx, more or less clothed with hairs.

H. hirsuta, Linn.—English Botany, t. 1379.—English Flora, vol. ii. p. 9.—Hooker, British Flora, vol. i. p. 144.—Lindley, Synopsis, p. 61.

Root tapering, long, with deep branched fibres. *Stems* numerous, much branched, laying prostrate upon the ground, round or slightly angular, smooth, sometimes hairy, leafy, slender, occasionally putting out roots from the axis of the leaves. *Leaves* opposite, ovate-oblong, attenuated at the base into a very short footstalk, with a mid-rib and two obscure lateral ones, smooth, or more generally the margin is fringed with white transparent hairs, the floral leaves alternate, mostly narrower than the others. *Stipules* between the leaves, large, ovate, acute, with a ciliated margin, pale, thin, white, membranous. *Flowers* small, pale green or yellowish, sessile, about ten, in crowded clusters in the axil of the leaves, or opposite to them. *Calyx* of five ovate acute segments, green, somewhat striated, concave within, and slightly coloured at the base, the margin with a pale narrow border. *Petals* five, narrow, pale, thin, awl-shaped, alternating with the five *stamens* on *filaments*, shorter than the calyx, and with ovate rather large yellow *anthers*. Both the petals and stamens are inserted into a fleshy disk at the base of the calyx. *Styles* very short, or wanting. *Stigmas* small, obtuse. *Capsule* enveloped in the persistent calyx, oblong, acute, formed of a membranous covering indehiscent, single seeded. *Seed* small, roundish, shining black.

Habitat.—Sandy or gravelly soil; rare. About the Lizard Point Cornwall.—*Rev. J. S. Tozer*. Near Newmarket.—*Rev. Mr. Hensted*. Perennial; flowering from June to August.

We have sought in vain for some prominent characters between the plants distinguished as *H. glabra* and *hirsuta*; in every particular we find them the same, except in that of hairiness; but this is of so very variable a character as not to be constant in either one or the other. It is true we have plants, both natives, and from the Continent, some of which are quite smooth, and the others with the stem, leaves, and calyx hairy; but we have also numerous specimens in every intermediate stage between the two states, so as to leave it doubtful to which species they belong; and after having watched with care the plants in different situations in Portugal, where they grow abundantly, we cannot longer think they are other than varieties of one species. It is a very different plant from the *H. incana*, Lam., which is very hairy, with oblong lanceolate leaves, and about three, not ten, flowers in a whorl, and it differs from *H. alpina*, Vill., which has ovate-oblong leaves, ciliated on the margin, and about one flower in the axis of the upper leaves, and the calyx is hairy.

Rupture-wort was formerly supposed to possess the power of reducing hernia; but happily for us in our times so dangerous a malady is not left to the supposed efficacy of any plant. The whole herb is inodorous and insipid.

GENUS XCIII. ULM'US.—LINN. *Elm.*

Nat. Ord. ULMA'CEÆ. MIRB.

GEN. CHAR. *Perianth* single, superior, bell-shaped, of four or five teeth, persistent. *Stamens* mostly five, but varying from three to six. *Stigmas* sessile. *Capsule* membranous, compressed, winged all round, single seeded.—Named, according to Théis, from the Anglo-Saxon Elm.

1. *U. campestris*, Linn. (Fig. 495.) *Common small leaved Elm*. *Narrow leaved English Elm*. Leaves rhomboid, ovate, acuminate, wedge-shaped, and oblique at the base, always scabrous above, doubly and irregularly serrated, serratures incurved, downy beneath; branches wiry, slightly corky when young, bright brown and pubescent; fruit oblong, deeply cloven, naked.

English Botany, t. 1836.—English Flora, vol. ii. p. 20.—Hooker, British Flora, vol. i. p. 144.—Lindley, Synopsis, p. 226.

Trunk mostly crooked, seldom straight, with rough rugged bark, its branches widely spreading, zigzag, brown, leafy, more or less winged, with corky excrescences, and when young more or less downy, slender

and wiry. *Leaves* alternate, rhomboid, ovate, from one to two inches long, with an acuminate point, unequal at the base, in a wedge-shaped manner, the margins irregularly and doubly serrated, the larger teeth curved upwards, dark green on the upper side, and rough, with short rigid points, paler beneath, and scattered over with hairs, the mid-rib and almost straight lateral veins pale, prominent, and mostly in the axis of the ribs the pubescence is most abundant. *Flowers* much earlier than the leaves, in dense tufts, bursting through the brown scaly buds, each elevated on a short footstalk, and having at its base a small oblong *bractea*, mostly fringed on the margin. *Perianth* of one piece, with a limb of four oblong pale pinkish lobes, with minutely fringed margins. *Stamens* four, on longish *filaments*, bearing dark purplish ovate two celled *anthers*. *Stigma* a downy line on the upper margin of the pointed curved short *styles*, which at length become much dilated into a thin palish green membrane, of an oblong wedge-shaped form, forming a winged border to the small oblong pale brown shining single seeded *capsule*, the point with a deep dilated sinus at the apex.

Habitat.—Woods and hedges; most frequent in the South of England, especially in Norfolk and Sussex.

Tree; flowering in March and April.

This is considered the most valuable of our Elms for the durability of its wood, being harder, tougher, and less liable to decay when exposed in damp situations, qualities rendering it more suitable for various purposes, especially the nave of wheels and instruments of husbandry. It is a large tree, with crooked trunk and branches, not producing flowers until it has attained its almost full size.

2. *M. sub'erosa*, Ehrh. (Fig. 496.) *Common Cork-barked Elm*. Leaves nearly orbicular, acute, obliquely cordate at the base, sharply, regularly, and doubly serrated, always scabrous above, downy beneath, especially in the axilla; branches spreading, bright brown, winged, with corky excrescences, when young very hairy; fruit nearly round, deeply cloven.

English Botany, t. 2161.—English Flora, vol. ii. p. 21 —Hooker, British Flora, vol. i. p. 144.—Lindley, Synopsis, p. 226.

Trunk mostly straight, with rigid spreading branches, mostly much clothed with thick corky excrescences, split into deep fissures, of a palish brown colour, the young shoots covered with a soft downiness. *Leaves* much larger than the last species, roundish, oblong, with an acute point, and oblique unequal somewhat heart-shaped base, the margins sharply, mostly regularly and doubly serrated, always rough above, with short rigid points, paler beneath, and hairy, with a strong mid-rib and straight lateral veins, the axis with dense tufts of pale hairs. *Flowers* much earlier than the leaves, in dense tufts, bursting through the brown scaly buds, each flower elevated on a short stalk,

with a small oblong smooth bractea at the base. *Perianth* of one piece, the limb of four or five roundish oblong reddish green lobes, smooth, or somewhat hairy. *Stamens* four or five, with long *filaments* and ovate purplish two celled *anthers*. *Stigmas* downy. *Capsule* roundish oblong, yellowish green, deeply notched at the apex to the oblong, brown, shining, single seeded cells.

Habitat.—Hedges ; frequent.

Tree ; flowering in March and April.

This species, probably not indigenous, is readily distinguished by the shape of its leaves, the form of the tree, and the much winged branches, with corky excrescences, which crack into deep fissures, and fall off as the branches increases in thickness. Numerous varieties are produced by cultivation, in the shape of the leaves, and the more or less winged excrescences of its bark. The wood appears less durable in its quality than the last species. Both are more or less cultivated in almost all parts of Italy, planted on the borders of the fields, intermixed with poplar, maple, and other trees. The leading branch is cut off when the trees are young to force it to put out more numerous and stronger lateral branches. On the trunks of these trees the more slender stem of the vine is trained, and its pliant branches festooned in every graceful form of its native elegance give a beautiful character to the landscape, and are a rich feature in the scene, especially in the Autumnal months, when laden with the generous fruit, deeply blushing in its purple hues.

3. *U. ma'jor*, *Smith*. (Fig. 497.) *Dutch Cork-barked Elm*. Leaves ovate, acuminate, very oblique, and subcordate at the base, sharply, doubly, and regularly serrated, always scabrous above, pubescent below, with dense tufts of white hairs in the axilla ; branches spreading, bright brown, much winged, with corky excrescences, when young nearly smooth ; fruit ovate, slightly cloven.

English Botany, t. 2542.—English Flora, vol. ii. p. 22.—Hooker, British Flora, vol. i. p. 144.—Lindley, Synopsis, p. 226.

Trunk straight, with rigid spreading or slightly drooping branches, mostly very rugged, and thickly clothed with corky excrescences, of a smooth brown colour, the young shoots scattered over with soft pubescence. *Leaves* larger than the last species, ovate, with an acuminate point, rather long and slender, very oblique at the base, in a somewhat heart-shaped manner, the margin deeply serrated, with sharp, regular, doubly serrated, somewhat curved teeth, always scabrous above, paler and downy on the under side, with dense tufts in the axis of the prominent mid-rib, and nearly straight lateral veins, the footstalk short and thick. *Flowers* numerous, much earlier than the leaves, in dense tufts, bursting through the brown obtuse scaly buds, each flower on a short footstalk, from the base of a small lanceolate bractea. *Perianth* of one piece, the limb of four or five short roundish oblong segments,

mostly fringed on the margin with short hairs. *Stamens* three, four, or five, on slender purple filaments, with ovate two celled purple *anthers*. *Stigmas* curved, downy. *Capsules* large, obovate, pale green, the cleft at the apex not reaching half way down to the single seeded smooth brown ovate cell.

Habitat.—Hedges in various parts of England.

Tree; flowering in March.

This, like the last species, appears a doubtful native. Smith quoting Miller says, "This Elm was brought from Holland in King William's reign, and being recommended for its quick growth, was a fashionable tree for hedges in gardens, but afterwards fell into disuse." He adds, "the wood is good for nothing, so it is almost banished from this country." It is not unfrequent in Italy, but by the Italian Botanist not considered distinct from the last species.

4. *U. gla'bra*, Miller. (Fig. 498.) *Smooth-leaved, or Witch Elm*. Leaves ovate-lanceolate, acuminate, doubly and evenly serrated, wedge-shaped, and oblique at the base, becoming quite smooth above, smooth or glandular beneath, with a few hairs in the axilla; branches bright brown, smooth, slender, drooping; fruit obovate, deeply cloven.

English Botany, t. 2248.—English Flora, vol. ii. p. 23.—Hooker, British Flora, vol. i. p. 145.—Lindley, Synopsis, p. 226.

β. glan'dulosa, Lindley. Leaves very glandular beneath.

γ. lati'folia, Lindley. Leaves oblong, acute, very broad.

A tall tree, with straight trunk, its branches smooth, drooping or spreading, slender, wiry, the young shoots only in their early growth covered over with a slight soft downiness. *Leaves* ovate-lanceolate or ovate-oblong, with an acuminate point, obliquely wedge-shaped at the base, the margins doubly, evenly, somewhat coarsely serrated, of a firm texture, the upper side smooth, the under at first scattered over with a few hairs, and somewhat glandular, becoming smooth, except on the ribs and their axilla, paler than the upper, the mid-rib and almost straight lateral veins paler and prominent. *Flowers* in dense crowded tufts before the leaves appear, almost sessile from the bosom of an oblong downy *bractea*. *Perianth* of one piece, downy, the limb of five obtuse short segments. *Stamens* on long slender purple *filaments*, with small ovate two celled purple *anthers*. *Capsule* obovate, pale green, deeply cloven to the apex of the ovate smooth brown single seeded cell.

Habitat.—Hedges, plantations, &c.; not unfrequent in many parts of England.

Tree; flowering in March. *β.* near Ludlow.—Professor Lindley. *γ.* at West Hatch, in Essex.—Mr. Forster.

To this species Professor Lindley observes, the Dowton Elm and Scampston Elm of the nurseries probably belong.



495

Ulmus campestris.



496

Ulmus suberosa.



497

Ulmus major.



498

Ulmus glabra.



499

Ulmus stricta



500

Ulmus montana

5. *U. carpiniifolia*, Linn. *Horn-beam leaved Elm*. Leaves ovate, acuminate, coriaceous, strongly veined, simply crenate, serrate, slightly oblique and cordate at the base, shining, but rather scabrous above, smooth beneath; branches bright brown, nearly smooth, fruit—?

Lindley, Synopsis, p. 226.—Hooker, British Flora, vol. i. p. 145.

Habitat.—Four miles from Stratford Avon, on the road to Alcester. Tree.

This species we are unacquainted with. The description is that of Professor Lindley, as given in his Synopsis of the British Flora.

6. *U. stric'ta*, Lindley. (Fig. 499.) *Cornish Elm*. Leaves obovate, cuspidate, wedge-shaped at the base, evenly and nearly doubly crenate, serrate, strongly veined, coriaceous, very smooth and shining above, smooth beneath, with hairy axillæ; branches bright brown, smooth, rigid, erect, very compact, fruit—?

β. parvifolia, Lindley. Leaves much smaller, less oblique at the base, finely and regularly crenate, acuminate rather than cuspidate.

Lindley, Synopsis, p. 227.—Hooker, British Flora, vol. i. p. 145.

Habitat.—Cornwall and North Devon; *β.* the less common.—Lindley. Tree.

Of this species we know nothing more than from dried specimens: the description is that of Lindley, who appears to have given much attention to this genus, and truly observes, that “nothing can be more imperfect than the state of our knowledge of either our domestic or foreign elms. The whole genus requires to be carefully studied by some one who can observe the species in different states of growth, and also ascertain the quality of their timber;” and he says, “I have no doubt that all here enumerated (referring to the above and following species) are distinct; and it is probable that the Wormsley Grange or Byford Elm of Hertfordshire, and the Black Elm of Ireland, are other species to add to our Flora.” But, as he further very justly remarks, “let it always be remembered, however, that it is not from dried specimens that such a genus as this can be understood.”

7. *U. mon'tana*, Bauh. (Fig. 500.) *Broad-leaved Elm, Witchhasel Elm*. Leaves obovate, cuspidate, doubly and coarsely serrated, wedge-shaped, and nearly equal at the base, always very scabrous above, downy beneath; branches smooth grey, drooping; fruit roundish oblong, scarcely cloven.

English Botany, t. 1887.—English Flora, vol. ii. p. 22.—Hooker, British Flora, vol. i. p. 145.—Lindley, Synopsis, p. 227.

A large tall spreading tree of quick growth, with soft inferior wood, the branches spreading, and frequently weeping, slender, clothed with grey bark, smooth, except when in a young state they are downy. Leaves broadly ovate, with a long point, and roundish, wedge-shaped at the base, the margins deeply, acutely, doubly, and coarsely serrated,

the upper surface rough, with short rigid points, the under paler, and scattered over with pale hairs, more abundant at the axilla of the midrib, and prominent almost straight lateral veins. *Flowers* in rather loose tufts before the leaves appear, bursting through a numerous scaly bud, each flower on a very short footstalk, smooth, or sometimes slightly hairy. *Perianth* of one piece, the limb mostly of five ovate segments, of a pinkish colour. *Filaments* long, with purple ovate two celled *anthers*. *Stigmas* short. *Capsule* roundish oblong, of a pale yellowish green, scarcely notched at the apex, and in the centre is the ovate pale brown smooth single seeded cell.

Habitat.—Groves and hedges; frequent.

Tree; flowering in March.

This species is readily distinguished by its large size, spreading or drooping branches and broad leaves. It is, Professor Henslow remarks, perhaps the only true indigenous species. It is common in Scotland, and seems without doubt to be wild. Many varieties of it are obtained by cultivation; and, according to Lindley, the Giant Elm and the Chichester Elm of the nurseries are varieties; and he says this species is often confounded by foreign botanists with *U. pedunculata*, a totally different species, not found in England. It is very nearly related to the *U. rubra* of North America, from which it can be scarcely distinguished by the leaves.

This is perhaps the most ornamental and most generally used of our species of elm; it is of more rapid growth, and obtains a more portly size than the others, rendering it better suited for ornamental scenery in parks, the formation of groves, shady walks, &c.; and how many of our early associations are connected with the pleasures or the sorrows of scenes over-shadowed by the old elm tree; and what volumes of ever hidden history do their pendant branches sometimes adumbrate; for

“Beneath those rugged *elms*, that yew tree’s shade,
Where heaves the turf in many a mouldering heap,
Each in his narrow cell for ever laid,
The rude forefathers of the hamlet sleep.”

Gray.

But it is not only with griefs and sorrows that the noble elm combines, for

“How blithesome were we wont to rove
By verdant hill or shady grove,
Where fervent bees, with humming voice,
Around the honey’d oak rejoice,
And aged *elms* with awful bend,
In long cathedral walks extend!”

Blackstone.

These, however, are only its ornamental purposes; but perhaps there are not any other of our native trees, independent of its wood, that have been applied to so many uses. The spongy cuticle of some of the species is similar to that of the *Quercus suber*, or cork oak,



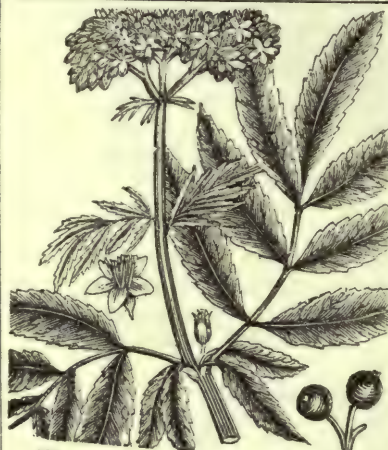
501

Viburnum lantana.



502

Viburnum opulus.



503

Sambucus ebulus.



504

Sambucus nigra.



505

Sambucus nigra var. laciniata.



506

Staphylea pinnata.

but the quantity produced is not sufficient, or its quality so good, as to be used for the purposes of cork. The inner bark, as well as the leaves, are slightly astringent and mucilaginous, containing extractive matter, with gallic acid, and a small portion of supertartrate of potash. It is the inner bark which has obtained the greatest reputation as a medicine, and was admitted into the Pharmacopæias; and Klaproth, upon examination, found it to contain a peculiar substance, which he called *ulmine*. It differs from every other known body, and must, therefore, constitute a new and peculiar vegetable principle. It exudes spontaneously from the trunk and branches. The sap, too, which frequently exudes from wounds of the trunk and branches in great abundance, was formerly supposed to be useful in the cure of recent ruptures. It is the decoction of the inner bark which has obtained for it the greater reputation, especially in the cure of diseases of the skin; and from the time of Pliny we find it used with vinegar for the cure of *scabbia*, infused in cold water, and taken copiously it purged the body and purified it from *flemma*; but in all forms, either of the young buds, the leaves, the bark, or root, it was supposed particularly useful in beautifying and cleansing the skin: hence it is that in latter days it has been extolled in the cure of ichthyosis and other cutaneous diseases; but as to its curative properties, in some of the obstinate and untractable affections, there is but little opportunity of experience in this country, and the use of the elm bark seems almost confined to the form of decoction as a mucilaginous drink in affections of the kidney and bladder. In the northern parts of Europe, in times of scarcity, the inner bark of the elm, as well as that of other trees, has been dried and ground into a fine powder, and made into bread. The leaves in many parts of Europe are collected and dried for winter provender for sheep and cattle; and for this purpose also, especially in some parts of Italy and the South of France, the leaves of the mulberry, vine, plane, and chestnut, are collected and dried for the same use. What is called British herb, or spurious tea, is mostly the prepared leaves of some species of elm, generally, we believe, the *U. campestris*. This is seldom sold alone, but chiefly used for adulterating the China teas.

ORDER III.

TRIGYN'IA. 3 PISTILS.

GENUS XCIV. VIBURN'UM.—LINN. *Guelder-rose*.

Nat. Ord. CAPRIFOLIA'CEÆ. JUSS. '

GEN. CHAR. *Calyx* five-cleft, superior. *Corolla* bell-shaped, five lobed. *Stigmas* sessile. *Fruit* a succulent berry, from one to three seeded.—Name of doubtful origin.

1. *V. Lant'ana*, Linn. (Fig. 501.) *Mealy Guelder-rose*, or *Way-faring tree*. Leaves ovate, acute, heart-shaped at the base, serrato-crenate, veiny and rough, with starry down beneath.

English Botany, t. 331.—English Flora, vol. ii. p. 107.—Hooker, British Flora, vol. i. p. 146.—Lindley, Synopsis, p. 132.

A large much branched *shrub*, or small tree, with numerous round smooth pliant opposite branches, with reddish brown somewhat shining bark, the young shoots green, and thickly clothed with a 'mealy pubescence. Leaves opposite, deciduous, ovate, with an obtuse or acute point, mostly heart-shaped at the base, sometimes obliquely so, one side longer on the channeled footstalk than the other, the margin crenated, or between crenated and serrated, with a strong mid-rib and numerous branched veins beneath, which, as well as the footstalk, are clothed with a thick mealy downiness, of beautiful star-like tissue, as well as the whole under side of the leaf, which is paler than the upper, where it is less downy, and the down not so much stellated. *Inflorescence* a terminal cyme, on short furrowed footstalks. *Flowers* numerous, white, crowded, regular. *Bractees* several, small, linear, acute, downy. *Calyx* of five small ovate obtuse segments crowning the fruit. *Corolla* of one petal, bell or funnel-shaped, with a short tube, and the limb of five obtuse nearly equal spreading lobes. *Stamens* with slender *filaments*, as long as the corolla, and ovate yellow *anthers*. *Stigmas* obtuse, sessile. *Fruit* a compressed berry, at first red, becoming black, with a little mealy pulp, and mostly one large flat furrowed seed.

Habitat.—Woods and hedges, especially in a chalky or lime-stone country, but very common. Dunglass glen, in Scotland.

Shrub; flowering in May.

The Wayfaring tree is not a shrub of either much beauty in its appearance, nor is it applied, that we are aware of, to any particular use. The leaves change to a dark red in autumn. From the bark, bird lime may be made, but it is inferior to that of the Holly, (page 206;) and Pallas informs us, that in the Crimea the young shoots are

used for the purpose of making tubes for tobacco pipes. This is supposed to be the plant mentioned in Virgil,

“Quantum leuta solent inter *viburna* cupressi.”

The pubescence upon the leaves is a beautiful object for examination under the microscope, and a good example of stellated down.

2. *V. O'pulus*, Linn. (Fig. 502.) *Common Guelder-rose, or Water Elder.* Leaves three or five lobed, smooth, the lobes acuminate, toothed, petioles with glands, the outer flowers radiant, larger, neuter.

English Botany, t. 332.—English Flora, vol. ii. p. 107.—Hooker, British Flora, vol. i. p. 146.—Lindley, Synopsis, p. 132.

A small much branched tree or shrub, with pale smooth shining bark. *Branches* opposite, round, rather brittle. *Leaves* opposite, quite smooth above, large pale green, mostly of three, sometimes of five lobes, each lobe with an acuminate point, and a rather large mostly irregularly toothed margin, paler on the under side, with a stout midrib and numerous branched veins, smooth, or more or less clothed with pale simple down, especially on the ribs and veins, footstalks channeled above, somewhat dilated at the base, and on the edge towards the top are several cup-shaped glands, and towards the base narrow leafy appendages. *Inflorescence* large terminal cymes, on short smooth furrowed footstalks. *Flowers* numerous, crowded, white, those of the centre rather small, bell-shaped, with a limb of five rounded segments, those of the circumference radiating, much larger, irregular, plane, of five large unequal lobes, and without either stamens or pistils. *Bractees* long, linear. *Calyx* of five very small teeth, crowning the fruit. *Stamens* with awl-shaped *filaments*, longer than the corolla, the *anthers* yellow, ovate. *Stigmas* obtuse, sessile. *Fruit* drooping, fine scarlet, ovate, smooth shining berries, very succulent. *Seed* flat, ovate, minutely dotted.

Habitat.—Woods, hedges, and coppices; frequent, in damp places in England, Scotland, and Ireland.

Shrub; flowering in June and July.

The leaves in autumn, like the last species, become of a reddish colour. It is an ornamental plant in hedge rows when in flower, and not less so when laden with its drooping bunches of bright scarlet fruit. It is a well known plantation shrub, under the name of *Snow-ball tree*, when by cultivation the whole of the corollas of the flowers have expanded nearly as large as those of the radiant ones in the wild plant, and the cymes assume a globose figure, hence it has got the name of snow-ball tree, and makes a pretty variety with other shrubs; but its leaves fall away in winter, which renders it a much less favourite plantation shrub than the Laurestine, another species of this genus, the *V. tinus*, which is not uncommon in Italy and many other parts of the Continent, and is preferable to the others of this genus, as being evergreen, and in warm places continues in flower almost all the year round.

GENUS XCV. SAMBUCUS—LINN. *Elder.*

Nat. Ord. CAPRIFOLIA'CEÆ. Juss.

GEN. CHAR. *Calyx* five-cleft, superior. *Corolla* wheel-shaped, of five at length reflexed lobes. *Stigmas* sessile. *Fruit* a succulent berry, three or four seeded.—Named from *σαμβυκη*, a musical instrument, said formerly to have been made of this plant; and the Greek word is derived from the Hebrew *sebekka*, a kind of harp, or a triangular instrument, strung with cords; in the Book of Daniel, ch. iii., v. 5, 7, 10, 15, it is translated *sackbut*.

1. *S. Ebu'lus*, Linn. (Fig. 503.) *Dwarf Elder*, or *Dane-wort*. Stem herbaceous; cymes of three principal branches; stipules leafy, ovate, serrated.

English Botany, t. 475.—English Flora, vol. ii. p. 108.—Hooker, British Flora, vol. i. p. 146.—Lindley, Synopsis, p. 132.

Root fleshy, long, creeping. *Stem* herbaceous, from two to three feet high, simple, angular, furrowed unequally, roughish, leafy. *Leaves* opposite, pinnate, with a long striated common footstalk, roughish, slightly dilated at the base, with leafy ovate serrated *stipules*, and with three or four pairs of *leaflets*, and an odd one, narrow, lanceolate, from one to four inches long, smooth, dark green, paler beneath, and mostly somewhat hairy, with a prominent mid-rib and numerous branched veins, the margin finely serrated, and the base unequal. *Inflorescence* a terminal cyme, of three principal smooth or hairy branches, much divided above. *Flowers* numerous, crowded, purplish, equal. *Calyx* with five ovate acute persistent teeth. *Corolla* wheel-shaped, with five ovate acute spreading lobes, at length reflexed. *Stamens* with awl-shaped *filaments*, as long as the corolla and large ovate *anthers*, of a purple colour. *Stigmas* sessile. *Fruit* a small round purplish black berry, with from three to five angular *seeds*.

Habitat.—Road sides and waste places; not very common in England and Scotland, or Ireland.

Perennial; flowering in June.

The root and whole plant has a disagreeable fœtid smell, is violently purgative, and sometimes emetic. It is not unfrequently used by the country people, but is a violent medicine. It is said to drive away moles, and its leaves sprinkled in barns and other places will keep away mice, but this we have not found to be the case, nor will those of the following species, as is reported of it also.

2. *S. ni'gra*, Linn. (Fig. 504.) *Common Elder*. Stem woody; cymes of five principal branches; stipules obsolete.

English Botany, t. 476.—English Flora, vol. ii. p. 109.—Hooker, British Flora, vol. i. p. 147.—Lindley, Synopsis, p. 132.

β. *leucocarpa*. Fruit white.

γ. laciniata. (Fig. 505.) Leaflets cut and lacinated.—*S. laciniata* Mill. Dict.

δ. virescens. Fruit green.—*S. virescens*, Desf.

A small bushy tree, with opposite branches, of quick growth, frequently putting out shoots a yard long during the year, which are full, of a soft spongy pith, and clothed with a smooth pale shining grey bark, mostly abundantly scattered over with small lenticular glands. *Leaves* opposite, pinnate, with striated channeled footstalks, smooth or hairy, with mostly two pairs of leaflets and an odd one, ovate-lanceolate, with a tapering point and generally oblique base, sessile, or on short partial footstalks, of a deep green, smooth, sometimes hairy, especially on the mid-rib and branched veins of the paler under side; the margin serrated in the variety *δ.*, cut and lacinated. *Stipules* two fleshy warts at the base of the leaves. *Inflorescence* terminal, cymes of five principal branches, much divided above. *Flowers* numerous, regular, cream coloured, with a sweetish faint unpleasant smell. *Calyx* limb of five spreading teeth. *Corolla* wheel-shaped, limb of five roundish ovate segments. *Stamens* with awl-shaped stout filaments, scarcely as long as the corolla. *Anthers* oblong, notched, yellow. *Stigmas* obtuse, sessile. *Fruit* a dark purplish black small round berry, sometimes, as in the varieties, *virescens* green, and in *leucocarpa* white, with three or four seeds.

Habitat.—Woods, hedges, &c.; frequent.

A Tree; flowering in June.

Perhaps there are none of our native plants applied to so many useful purposes as the elder. The inner bark of the tree was formerly much used, and entered into the list of the Pharmacopœias; it has scarcely any smell, and but very little taste, except that of slight sweetness, with a degree of acrimony; it was prepared by boiling three handfuls in a quart of milk and water till reduced to a pint, one half to be taken at night, and the remainder in the morning, and this repeated for several days; it usually acts both as a purgative and emetic. The expressed juice in doses of about half an ounce was also given, medicinally, in many chronic diseases; it is now, however, except in some country places, out of use. The wood is white, and close grained, and is esteemed as one of our most useful woods for the purpose of making knife handles, skewers, small toys, and ornamental articles. The leaves are strewed about barns to keep away mice, and in the subterranean passages of moles to drive them away, as it is said they have a great objection to them; boiling water, in which the leaves have been infused, sprinkled over delicate plants liable to the attack of small insects, protects them from injury, as few insects will feed upon elder: indeed it seems very objectionable, if not poisonous, to most of them. The undeveloped flower buds, when pickled with vinegar, form one of the best substitutes for capers; and the expanded flowers, which have an agreeable smell, are, when fresh, used in the form

of tea, which is gently aperient; the dried flowers are also used as tea, to make fomentations, and distilled with water, which has the fragrance of the flowers. It is considered a pleasant and good wash for inflamed eyes; made hot, and with the addition of a little sugar it is taken at bed time to produce perspiration, for the relief of colds, coughs, &c.; they are also made into ointment in the same way as the bark, and considered excellent in dispersing of tumors, the healing of wounds, &c. The dried flowers are also used to flavour vinegar, and the French scatter them amongst their heaps of apples, or pack them up with their fruits, to communicate to them an agreeable flavour. The ripe berries have a sweetish but rather sickly taste, and yield upon pressure a fine purple juice; when boiled with spices and sugar, and fermented, it forms an excellent kind of wine, much esteemed: taken hot before going to bed, with toasted bread, it is a very favourite remedy with the country people, both as a preventative and cure for colds, and is frequently of great use, as it produces perspiration, and mostly acts as an aperient; it is far from being to most persons an unpleasant remedy. The juice fermented with a small portion of sugar, and treated in the ordinary way of making wine, is by no means despicable; after it has been kept in bottles for some time it deposits part of its colouring matter, with a portion of salt, and has much the appearance of port wine. The berries are also boiled with sugar into a kind of preserve, and thought to be very useful in sore throats, coughs, and colds; but they are said to be deleterious to poultry, especially to turkeys, if they are, we presume they very seldom eat them, for no trees are more common than the elder in farm yards and hedges in almost all parts of the country, and we know not of any circumstance that has led to the belief of their causing any injury to the poultry which are daily picking about them.

The elder is not much esteemed as an ornamental shrub; it is showy both in flower and fruit: and will grow in almost all situations in the close smoky recesses of towns, as well as in the country, but is heavy looking in its foliage. The variety with lacinated leaves, or the parsley leaved elder, as it is called, is far less objectionable, and there are some very pretty kinds occasionally met with having variegated leaves, which look very pleasing amongst other plants in plantations and shrubberies; but it is liable to lose its variegated appearance, if planted in too good soil, the whole leaves become green.

Paper stained with the purple juice of the berries, is a good test to ascertain the presence of acids in making chemical experiments.

GENUS XCVI. STAPHYLE'A.—LINN. *Bladder-nut.*

Nat. Ord. CELASTRIN'Æ. R. BROWN.

GEN. CHAR. *Calyx* five-parted, inferior, coloured, with an urceolate disk at the base. *Petals* five. *Styles* two or three, sometimes united. *Fruit* a membranous capsule, of two or three cells dehiscing internally. *Seeds* roundish.—Named from σταφυλη, a bunch of grapes; its flowers being in racemes.

1. *S. pinna'ta*, Linn. (Fig. 506.) *Common Bladder-nut.* Leaves pinnate; leaflets ovate-lanceolate, five to seven, smooth, serrated; flowers racemose; capsule membranous inflated.

English Botany, t. 1560.—English Flora, vol. ii. p. 110.—Hooker, British Flora, vol. i. p. 147.—Lindley, Synopsis, p. 75.—(Ord. *Staphyleaceæ*.)

A branched spreading *shrub*, five or six feet high, with smooth greenish pale bark, with numerous leaves, similar in appearance to the ash, gracefully drooping on all sides. *Leaves* pinnate opposite, quite smooth, of a cheerful green, *leaflets* five to seven, opposite, with a terminal one ovate-lanceolate, or ovate, with a shortly acuminate point, the margin fine and sharply serrated, paler beneath, with a mid-rib and numerous slender branched veins, common footstalk long, channeled above. *Stipules* pale, thin, membranous, soon falling away both from the leaves and leaflets. *Inflorescence* terminal drooping racemes, somewhat paniced. *Bractes* small, linear at the base of the partial flower stalks, soon falling away. *Flowers* not very numerous, drooping, of a pale yellowish green. *Calyx* inferior, of one leaf, with a limb of five deep oblong obtuse coloured segments, as long as the corolla, having at its base a coloured large urn shaped disk. *Petals* five, alternating with the segments of the calyx, narrower, and of a thinner more delicate texture, inserted into the margin of the disk. *Stamens* as long as the corolla, with awl-shaped *filaments*, inserted into the disk, and with roundish yellow *anthers*. *Styles* rather long, two, erect, with obtuse *stigmas*. *Fruit* a large thin membranous inflated bladdery capsule, of two cells, pointed at the top and open, each containing one or two seeds, bursting internally, and seldom more than one or two capsules perfected on each raceme. *Seed* globose, hard, bony, light brown, polished, without *albumen* and thick *cotyledons*.

Habitat.—Hedges and thickets, but rare; Yorkshire, and about Ashford, in Kent. A very doubtful native, though said by Mr. Hailstone to be truly indigenous about Pontefract.

A shrub; flowering in June.

The Bladder-nut is a large ornamental shrub, frequently planted in shrubberies; its foliage is graceful, and the capsules are curious, remaining on the tree a long time. The seeds are highly polished,

and used by the poor people on the Continent, where the plant is more frequent than with us, to make necklaces; they have a sweetish taste when masticated, succeeded by a somewhat nauseous bitterness, and if many of them are eaten produce sickness and vomiting. The wood is white and brittle.

GENUS XCVII. TA'MARIX.—LINN. *Tamarisk*.

Nat. Ord. TAMARISCI'NEÆ. DES VAUX.

GEN. CHAR. *Calyx* four or five parted, persistent, inferior. *Petals* four or five. *Stamens* four or five, or double the number. *Stigmas* three, long, spreading, glandular, and oblique at the apex. *Capsule* tapering to a point, of one cell, three valved, and many seeded. *Seeds* crowned with long simple hairs.—Named from the *Tamarisci*, a people who inhabit the banks of the *Tamaris*, now *Tambra*, in Spain, where the amarisk Tabounds.

1. *T. Gal'lica*, Linn. (Fig. 507.) *French Tamarisk*. Smooth glaucous leaves, ovate, acuminate, minute; spikes lateral, numerous; bracteas with a long tapering point.

English Botany, t. 1318.—English Flora, vol. ii. p. 111.—Hooker, British Flora, vol. i. p. 147.—Lindley, Synopsis, p. 62.

Stem slender, nearly erect, with long drooping slender red shining branches. *Leaves* minute, glaucous green, ovate, with a long acuminate point, bluntly spined at the base, and embracing the stem. *Inflorescence* lateral and terminal, spikes becoming after flowering racemose, from the flowers being elevated on short footstalks. *Flowers* numerous, crowded, pale pink, inodorous, each with a small bractea at its base, somewhat ovate, with membranous margins and a long tapering point. *Calyx* of five ovate segments, with membranous margins united at the base. *Corolla* of five ovate oblong petals, three times as long as the calyx. *Stamens* on long slender filaments, alternating with the petals, dilated at the base, and either distinct or united at the base, sometimes there are four, or eight, or ten. *Anthers* small, pink, ovate. *Styles* wanting. *Stigmas* three, long, spreading, somewhat feathery, the apex with a rather large oblique gland. *Capsule* ovate, with a long tapering triangular point, of one cell and three valves, with a central placenta at the base of the valves. *Seeds* numerous, small, crowned with a stalked tuft, of a few long white shining simple hairs (*comose*).

Habitat.—Rocks, cliffs, and sandy shores near the sea. In most of the coves from the Nore-head to the Land's-end, on St. Michael's Mount, and other places, Cornwall; near Hurst Castle, Hants; and near Hastings; but no where with suspicion of having been planted.

Shrub; flowering in July.

The tamarisk is frequent in shrubberies, but a very doubtful native plant. In Cornwall, where it grows with the appearance of being wild, it is called by the common people Cypress, and forms in many places a beautiful ornamental fence round gardens and fishermen's huts; and it is commonly believed amongst the people that a Monk from the Continent, on landing on the Cornish coast, stuck his staff into the ground, and it grew into a tamarisk shrub. It is frequent in almost all parts of the Continent.

GENUS XCVIII. CORRIGIOLA.—LINN. *Strapwort*.

Nat. Ord. PARONY'CHIEÆ. St. Hil.

GEN. CHAR. *Calyx* five-parted, persistent, inferior. *Petals* five, inserted into the base of the calyx, and as long. *Stigmas* three, sessile. *Capsule* covered by the calyx, single seeded. *Seed* suspended by its cord, which arises from the bottom of the capsule.

—Named from *corrigia*, a strap or thong, from its long pliant stems.

1. *C. littoralis*, Linn. (Fig. 508.) *Sand Strapwort*. Stem leafy among the corymbose flowers; leaves of the stem linear, wedge-shaped.

English Botany, t. 1318.—English Flora, vol. ii. p. 112.—Hooker, British Flora, vol. i. p. 147.—Lindley, Synopsis, p. 60.—(Ord. *Illecebrææ*.)

Root small, tapering, and branched. *Stems* numerous, much branched, and spreading on the ground in every direction, from six to eighteen inches long, slender, smooth, round, and leafy. *Leaves* alternate, sometimes opposite, a pale glaucous green, quite smooth, linear, with an acute point, and those of the stem tapering at the base in a wedge-shaped manner into a short footstalk, each having at the base a pair of ovate acute very thin membranous *stipules*. *Inflorescence* in terminal and lateral corymbose leafy racemes at the end of the branches. *Flowers* very small, white, on short stalks. *Bractea* small, lanceolate, membranous. *Calyx* of five deep obovate segments, nearly as long as the corolla, green. *Corolla* of five obovate white spreading petals. *Stamens* with awl-shaped filaments, shorter than the corolla, and small roundish *anthers*, of a dark purplish colour. *Stigmas* three, sessile, very small. *Capsule* enveloped in the calyx, broadly ovate, of one cell, single seeded. *Seed* suspended from the top by its cord, which arises from the base of the capsule, black and shining.

Habitat.—South-west coast of England; rare. Slapham sands, and near the Star point, Devonshire; and at Helston and banks of the Loor, Cornwall.

Annual; flowering in July and August.

This rare little plant is very common on almost every sand bank in Portugal, where it grows to a much larger size than with us.

ORDER IV.

TETRAGYNIA. 4 PISTILS.

GENUS XCIX. PARNASSIA.—LINN. *Grass of Parnassus.*

GEN. CHAR. *Calyx* five-parted, spreading. *Petals* five, veiny, and opposite the base of each is an heart-shaped fleshy scale, fringed with slender bristles, tipped with globular glands. *Stigmas* four, sessile. *Capsule* superior, of one cell, opening at the apex with four valves, each with a linear placenta bearing numerous seeds.—Named from Mount Parnassus, though the plant is by no means peculiar to that situation.

1. *P. palustris*, Linn. (Fig. 509.) *Common Grass of Parnassus.* Scales with from nine to thirteen bristles; root leaves on footstalks, heart-shaped, the solitary one of the stem amplexicaul.

English Botany, t. 82.—English Flora, vol. ii. p. 114.—Hooker, British Flora, vol. i. p. 147.—Lindley, Synopsis, p. 67.

Root of numerous long branched fibres. *Stem* erect, angular, striated, twisted, from "one inch" to eight or twelve high, quite smooth, as is the whole plant, with a solitary leaf below the middle, sessile, and embracing it. *Leaves* from the root numerous, on rather long channeled footstalks, heart-shaped, more or less acute at the point, not unfrequently rounded, with a mid-rib and several lateral ones from the base, paler beneath, and more or less profusely scattered over with small oblong glands, of a pinkish colour, sometimes wanting, but best seen in dried specimens, they are also numerous on the footstalks and lower part of the stem. *Flower* solitary at the top of the stem. *Calyx* five-partite, the segments ovate, acute, with numerous slender longitudinal veins, spreading. *Corolla* of five broadly ovate obtuse spreading concave petals of a beautiful white, with numerous pellucid veins, and sometimes, though rarely, the margin is fringed, the base with a short claw, and opposite to it is a fleshy heart-shaped scale, on a short stalk, having the margin fringed with from nine to thirteen awl-shaped slender bristles, each tipped with a small round yellow gland. *Stamens* alternating with them, and about the same length, with awl-shaped filaments and oval anthers, pale cream colour, of two cells, bursting longitudinally. *Stigmas* four, sessile, obtuse, spreading, crowning the capsule, which is broadly ovate, marked with four longitudinal furrows, nearly superior, of one cell, bursting about half way down from the apex, each with a longitudinal lateral placenta, bearing numerous small brown seeds, curved upwards, with a narrow membranous border all round.



507

Tamarix gallica



508

Corrigiola littoralis.



509

Parnassia palustris.



510

Statice armeria



511

Statice limonium



512

Statice spathulata

Habitat.—Bogs and wet places; common, especially in the North. Perennial; flowering from August to October.

The grass of *Parnassus* is one of our most interesting plants, remarkable for the very curious structure of the scales at the base of the corolla, and the stamens are remarkable, from their gradually one by one bending over the stigmas, and discharging the pollen upon them; when one has performed this office it returns to its former position, and another succeeds it, each stamen going through the same process in like manner; sometimes, but very seldom, two of them may be observed bending over at the same time. After the whole of the stamens have performed their office, the stigmas which were spreading now close up, the ovules increase in size, the capsule enlarges, the numerous seeds are perfected, and then the capsule bursts its sutures at the top for the escape of its progeny to perpetuate and increase its species.

ORDER V.

PENTAGYNIA. 5 PISTILS.

GENUS C. STATICE.—LINN. *Thrift*.

Nat. Ord. PLUMBAGINÆÆ. JUSS.

GEN. CHAR. *Calyx* of one piece, funnel-shaped, plaited, dry, membranous, persistent. *Corolla* of five petals, united at the base, and bearing the stamens. *Stigmas* five. *Capsule* enveloped in the calyx, with one seed.—Named from *στασιζω*, to stop; from its supposed qualities in stopping dysentery.

* *Flowers collected into a rounded head, inner scales of the involucre tubular at the base.*—(*Armeria*. De Cand.)

1. *S. Armeria*, Linn. (Fig. 510.) *Common Thrift*, or *Sea Gilliflower*. Leaves linear, single ribbed; scape simple, much longer than the leaves, bearing a round head of flowers; calyx with a striated hairy tube; the limb membranous, with five ribs, terminating in short bristles.

English Botany, t. 226.—English Flora, vol. ii. p. 115.—Hooker, British Flora, vol. i. p. 148.—*Armeria maritima*, Willd.—Lindley, Synopsis, p. 170.

Root long, woody, branched, dark brown, mostly very scaly and rough at the top, with the fibrous remains of old leaves. *Leaves* numerous, all radical, tufted, narrow, linear, lax, spreading, somewhat fleshy, dark green, slightly channeled above, with a narrow mid-rib,

and sometimes, but rarely, two obscure lateral ones, quite smooth, or sometimes with a few pale slender hairs on the margin and mid-rib. *Scape* erect, round, smooth, or more or less clothed with a close soft downiness, three or four times longer than the leaves, sheathed at the top with a close brown membrane, with a torn edge. *Flowers* numerous, in a round head, inodorous, rose coloured. *Involucre* of numerous scales, the outer ones ovate-lanceolate, with a pale brown thin membranous margin, the inner ones broadly ovate, obtuse, almost entirely membranous, united at the base into short tubes, or in a tubular form. *Calyx* funnel-shaped, the tube striated, with ten ribs, rough, with hairs pointed upwards, the limb longer than the tube, membranous, with five slender ribs, mostly hairy, continued from the tube, and elongated beyond the edge of the membrane in a short bristle, the *pedicle* of the calyx smooth, about as long as the tube, obliquely attached to the calyx. *Corolla* of five oblong obtuse petals, attenuated at the base, separate, or shortly united. *Stamens* attached to the base of the petals, with slender *filaments*, shorter than the petals. *Anthers* oblong, yellow. *Styles* ciliated, with long naked thread-like *stigmas*, as long as the stamens. *Fruit* a one celled ovate-oblong membranous capsule, enveloped in the persistent calyx. *Seed* solitary, pendulous from the apex of the umbilical cord, which arises from the bottom of the capsule. *Albumen* fleshy. *Embryo* straight.

Habitat.—Muddy sea shores, and amongst rocks by the sea side; frequent.

Perennial; flowering in July and August.

Thrift is so called from its capability of growing in almost any situation, from the clear pure atmosphere of our mountain tops, and the saline breezes of the sea shore to the smoke-loaded air of our close cities and towns. It flowers freely for a considerable period of the summer months, and its bushy grass-like foliage, with its long hard penetrating roots, render it an admirable plant for making edgings to flower borders, &c., and few gardens, especially in towns, have more suitable borders combining beauty and durability than when made with this plant.

S. plantaginea, a species not unfrequent on the Continent, was found on the west coast of the Island of Jersey, in August, 1833, and is admitted into our Flora by Sir W. J. Hooker. We, however, much doubt its claim as a British plant. Its leaves are linear lanceolate, from three to five nerved, with a simple scape, bearing a round head of pale purple flowers, the outer scales of the involucre with a tapering point, the inner very obtuse, the calyx limb with five long bristly teeth, and the petals roundish or truncated.

** *Flowers on one side on a paniculated scape.*—(*Taxanthema*, Neck.)

2 *S. Limonium*, Linn. (Fig. 511.) *Spreading-spiked Thrift*, or *Sea Lavender*.—Scape roundish, paniculated at the top; leaves ovate-

lanceolate, stalked, smooth, with a mid-rib, terminating in a hooked bristle.

English Botany, t. 102.—English Flora, vol. ii. p. 116.—Hooker, British Flora, vol. i. p. 148.—Lindley, Synopsis, p. 170.

Root long, branched, tough, and woody. *Scape* erect, from five to ten inches high, round below, angular above, and much branched in a paniculated manner, and more or less rough, with furrows, and with several lanceolate taper pointed membranous scales, and one at the base of each branch of the panicle. *Leaves* all arising from the root, very variable in size and luxuriance, from two to four inches long or more, ovate-lanceolate, of a somewhat leathery texture, glaucous green, tapering at the base, obtuse at the apex, with a curved bristly point, formed by the continuation of the margin of the leaf and the mid-rib, channeled above, *footstalks* broad and short, or long, with a broad base continued along the leaf in a mid-rib, and with several small lateral branched veins. *Inflorescence* a corymbose panicle, alternately branched, spreading, sometimes recurved. *Flowers* numerous, imbricated, all turned to the upper side, each having at its base about four scales, ovate-lanceolate, with an acute or obtuse point, membranous, or with membranous margins. *Calyx* funnel-shaped, nearly sessile, the tube short, five ribbed, slightly hairy at the lower part, terminating in five angular teeth of the membranous limb, the margin frequently with small intermediate teeth. *Corolla* a fine deep blue or purplish pale on the outside, ovate-oblong, obtuse, or slightly notched, tapering at the base into a claw. *Stamens* arising from the base of the claw, and nearly as long. *Anthers* small, ovate, yellow. "*Pollen* with three pellucid dots compressed." *Pistils* long as the stamens, slender, filiform, smooth. *Stigmas* rough, with minute papillæ. "*Germen* granulated." *Capsule* oblong, single seeded, enveloped in the calyx.

Habitat.—Muddy sea shores, and salt marshes; frequent in England and Ireland, rare in Scotland.

Perennial; flowering in July and August.

The roots of the Sea Lavender are astringent and tonic, but in a very slight degree. The flowers are inodorous, of a beautiful colour, and resemble in appearance common Lavender (*Lavandula spicata*.)

3. *S. spathulata*, Desf. (Fig. 512.) *Upright-spiked Thrift*. *Scape* round, branched from below the middle; panicle elongated; spikes erect; calyx with blunt teeth; leaves spatulate, three ribbed at the base, and a short obtuse point below the apex.

Sims, in Botanic Magaz. t. 1617.—Hooker, British Flora, vol. i. p. 149.—Lindley, Synopsis, Suppl. p. 327.—*S. binervosa*, Rev. G. E. Smith.—In English Botany Suppl. t. 2663.—*S. Limonium*.—β. English Flora, vol. ii. p. 116.—*Limonium minus*.—Ray, Synopsis. p. 202.

Root woody, tapering, branched, crowned at the top with numerous

remains of old withered leaves. *Scape* erect, somewhat zig-zag, round, branched from below the middle, its terminal branches angular, furrowed, scattered over with small prominent glands, especially above, and with several lanceolate membranous alternate scales below the middle, and one at the base of each division. *Leaves* all radical, somewhat leathery, of a glaucous green, small, reflexed, spatulate, with the footstalk of variable length, though never very long, with a mid-rib, slightly prominent on the under side, and terminating in a short obtuse point below the apex, and besides this there are two lateral parallel ribs, which extend to the middle or below the middle of the leaf, and sometimes there are four of these short ribs, all of which are pellucid when held between the eye and the light. *Inflorescence* a branched corymbose panicle, of numerous crowded alternate erect flowers, all turned to the upper side. *Flowers* mostly two together, sessile, surrounded at the base with several ovate scales, the outer ones green, leafy, with a pale membranous margin, the inner entire, membranous, sometimes jagged at the apex and sides. *Corolla* of five roundish ovate purplish blue petals, attenuated at the base into a narrow claw. *Calyx* funnel-shaped, with a long tube, of a reddish green colour, with five prominent ribs, tapering to about the middle of the pale membranous limb, and at the base are five others, intermediate shorter than the tube, smooth or fringed, with pale hairs pointed upwards, the limb about as long as the tube, pale, thin, membranous, with five roundish obtuse or emarginated segments. *Stamens* with slender awl-shaped *filaments*, shorter than the petals, and ovate white *anthers*. "Pollen with four or five pellucid dots, compressed. *Germen* smooth." *Styles* long, slender, filiform. "Stigmas covered with a reticulation of vesicles, not prominent, much larger than the papillæ of *S. Limonium*." *Capsule* ovate, enveloped in the persistent calyx. *Seed* solitary.

Habitat.—Sea shores, and amongst rock near the sea. Coast of Kent in several places.—*Gerard* and *Rev. G. E. Smith*. Shakspeare Cliff, Dover.—*Sir W. J. Hooker*. Harwich.—*Ray*. Mull of Galloway, Scotland.—*Mr. Goldie*. Rocks near Holyhead, and St. Bee's Head, near Whitehaven.—*Mr. W. Wilson*. Several places in North Wales.—*Dr. Howitt*, who furnished me with beautiful specimens. Devon.—*Mr. Banks*. Somerset.—*Mr. Christy*. Near Baldoye, Portmarnock, South side of the hill of Howth, Killiney-hill, and many other places on the Kerry coast, Ireland.—*Mr. Mackey*. North of Ireland.—*Mr. Drummond*.

Perennial; flowering in July and August.

The lower branches, both in this species and *S. Limonium*, are sometimes barren. Small plants with the lower branches barren have generally been mistaken for the following species; they are, however, readily distinguished from each other upon careful examination.

4. *S. reticulata*, Linn. (Fig. 513.) *Matted Thrift*. *Scape* round,



513

Statice reticulata.



514

Linum usitatissimum.



515

Linum usitatissimum var. *lineafolium.*



516

Linum perenne.



517

Linum angustifolium.



518

Linum catharticum.

slender, much branched in a paniculated manner from near the base ; the branches slender, much divided, and matted together, the lower ones barren ; flowers crowded ; calyx with angular teeth ; leaves spatulate, small, without points.

English Botany, t. 328.—English Flora, vol. i. p. 117.—Hooker, British Flora, vol. i. p. 149.—Lindley, Synopsis, p. 171.

Root of several stout branches, tough and woody, crowned with the crowded withered remains of old leaves, and mostly bearing several stems. *Scape* erect, roughish, with small prominent glands, round, branched from near the base, the branches slender, alternate, much divided, zig-zag, and above matted together, the lower branches always barren. *Bractees* small, ovate, acute, pale, thin, membranous, one at the division of each branch, and closely embracing it. *Leaves* all radical, small, spatulate, tapering at the base into a footstalk of variable length, channeled above, the apex rounded or acute, without a point or bristle, single ribbed. *Inflorescence* a much branched corymbose panicle, of slender zig-zag matted branches, the lower ones barren, and mostly reflexed. *Flowers* small, a pale blueish purple colour, much crowded, in small erect one sided tufts, each having at its base about four ovate obtuse scales, green, with membranous margins, or entirely membranous. *Calyx* funnel-shaped, with a short tube, with five stout ribs, of a reddish colour, tapering into about the middle of the segments of the limb, smooth, or with a few pale erect hairs at the lower part, and sometimes there are small short intermediate ribs, the limb pale, membranous, with five angular teeth. *Corolla* small, of five ovate petals, tapering into a claw. *Stamens* from the base of the petal, with a slender *filament*, shorter than the petal, and a small roundish *anther*, yellow. *Style* and *stigmas* *filiform*, as long as the stamens. *Capsule* small, ovate, enclosed in the persistent calyx. *Seed* solitary.

Habitat.—Muddy salt marshes ; rare. Chiefly on the coast of Norfolk ; between St. Peter's Point and the Washway below Wisbeach, and at Long Sutton Wash.

Perennial ; flowering in July and August.

This is a smaller and more slender spreading plant than either of the above species. Its delicate much branched and entangled inflorescence is very remarkable ; this, with numerous of the lower barren branches reflexed, readily distinguish it at first sight from the other species. It is seldom more than three inches high, sometimes, however, it is six. Small spreading branched specimens of *S. spatulata* have been mistaken for this plant, but they will be found very different in many respects, especially in the leaf and calyx.

GENUS CI. LI'NUM.—LINN. *Flax*.

Nat. Ord. LI'NEÆ. DE CAND.

GEN. CHAR. *Calyx* of five persistent pieces. *Corolla* of five petals. *Stamens* united at the base into a ring, with intermediate teeth opposite the petals, (abortive stamens). *Capsule* globose, pointed with the indurated base of the style, ten valved, and ten celled. *Seeds* ovate, compressed.—Named, according to Théis, from *Lin*, thread in Celtic.

* *Leaves* alternate.

1. *L. usitatissimum*, Linn. (Fig. 514.) *Common Flax*. Stem erect, mostly solitary, branched upwards; leaves lanceolate, smooth; sepals ovate, acute, three ribbed; petals crenate.

English Botany, t. 1357.—English Flora, vol. ii. p. 118.—Hooker, British Flora, vol. i. p. 150.—Lindley, Synopsis, p. 53.

β. *lineaefolium*. (Fig. 515.) Leaves narrow, linear, and the whole plant small.

Root slender, tapering, branched. *Stem* erect, from two to three feet high, solitary, sometimes two from the same root, round, smooth, finely striated, leafy, slender, mostly much branched in the upper part, the branches erect, or slightly spreading. *Leaves* lanceolate, quite smooth, a bright cheerful green, sessile, alternate, with three parallel nearly equal ribs, uniting at the point with numerous slender reticulated branches, the lower leaves mostly shorter than the upper, obtuse at the point. *Inflorescence* a leafy panicle. *Flowers* solitary, on slender terminal and lateral peduncles, large, fine purplish blue. *Calyx* of five ovate acute sepals, green, with a pale membranous margin, somewhat ciliated, a mid-rib, and two lateral ones, about half as long as the sepal. *Corolla* of five broadly ovate petals, tapering at the base into a claw, the margin irregularly crenated, with numerous branched veins. *Stamens* shorter than the corolla, on slender awl-shaped *filaments*, which are united round the germen in a narrow ring, and between each filament is a small tooth, opposite the petals, which are abortive stamens. *Anthers* oblong. *Styles* thread-shaped, erect, as long as the stamens, with blunt somewhat capitate *stigmas*. *Capsule* globose, smooth, pointed with the indurated base of the styles, formed of ten valves, and divided with thin membranous partitions into ten cells, each cell containing an ovate compressed seed, smooth, shining, brown. *Embryo* straight, and the *cotyledons* flat.

Habitat.—Corn fields and road sides; not unfrequent, but probably introduced, though now naturalized.

Annual; flowering in July.

Common Flax is one of the most useful of our plants; it is, in fact, called *L. usitatissimum*, from the great uses to which its various parts

are applied. The stems of several species afford tenacious fibres, but none are so valuable as those of this species. The stems are macerated for some time in water, until the bark and cellular substance become loosened; it is then dried and beaten until the fibrous part is free, and they are then known by the name of *flax*, which is applied to many useful purposes, being made into linen, &c. The fibrous substance, which is very tenacious and durable, renders it capable of being spun into such extremely fine threads, and wove into the most delicate fabrics. The fibres are a most beautiful substance under the lens of a microscope of great power, when it will be seen that even the finest filaments are composed of a number of fine tubes; and interspersed amongst these will be seen, when it is in a fresh state, minute particles of greenish matter. This, which is called by vegetable anatomists woody fibre, is thought by some to be only a form of cellular substance, which by compression is formed into elongated tubes, having transverse partitions. There appears, however, some reason to suppose that it is a distinct form of tissue, and that it is tubular, without partitions. The anatomical investigation of vegetable substances is one of extreme interest, and opens a wide field, in every step of which new objects of wonder and astonishment are presented requiring our further examination.

The *seeds* of this plant are known by the name of *linseed*; they have an unctuous feel, a mucilaginous sweetish taste, without any remarkable smell. They yield by expression a large quantity of oil, which, when made without the application of heat, has not any particular flavour or taste; it is sometimes used instead of castor oil, but is not either so pleasant in its operation, or so powerful in its effects. It forms with lime water a thin linament, which is considered one of the best applications to scalds and burns; but of late years this seems to be superseded by the use of cotton, or the application of dried wheaten flour to the injured parts. The seeds of flax also give to boiling water a considerable quantity of bland mucilage, which has but little flavour, and is frequently of great use in coughs, hoarseness, and catarrhal affections, as well as in affections of the urinary passages. The flour of the seeds is much esteemed for making poultices for various external affections, and the pulp left after the expression of the oil is formed into cakes, commonly called oil-cake, is used as food for cattle, but if too great a quantity is given, it gives the meat a peculiar flavour, which by many persons is not considered pleasant. The oil, both raw and boiled with litharge, is extensively used in the arts and manufactures, painting, &c.

2. *L. pe'renne*, Linn. (Fig. 516.) *Perennial Blue Flax*. Stems erect, numerous, branched upwards; leaves linear, lanceolate, acute, smooth; sepals obovate, obtuse, obscurely five ribbed, smooth.

English Botany, t. 40.—English Flora, vol. ii. p. 119.—Hooker, British Flora, vol. i. p. 150.—Lindley, Synopsis, p. 53.

Root tapering, slender, branched. *Stems* several from the same root, slender, erect, or slightly bending in the lower part, branched towards the top, round, smooth, leafy, from one to one and a half feet high. *Leaves* alternate, rather smaller than in the last species, linear, acute, single ribbed, somewhat glaucous green, especially beneath. *Inflorescence* rather large panicles, the *flowers* racemose on the branches, large, rather pale purplish blue, with dark radiating veins. *Calyx* of five, obovate, obtuse, each with a narrow membranous margin, and the outer ones mostly with a short obtuse point, five ribbed, the lateral ones sometimes obscure. *Corolla* of five spreading heart-shaped petals, the notch more or less distinct, and the margin generally slightly crenated. *Stamens* on short slender awl-shaped *filaments*, with yellow oblong *anthers*. *Styles* slender, longer than the stamens, with obtuse somewhat capitate *stigmas*. *Capsule* globose, smooth, pointed, with the hardened base of the style ten valved, ten celled, each cell single seeded.

Habitat.—Dry hilly situations. Cambridgeshire, Northamptonshire, Westmoreland, Norfolk, Suffolk; near Monkstown, Ireland.—*Mr. J. Drummond*.

Perennial; flowering in June and July.

This plant is readily distinguished by its obtuse calyx, its smaller leaves, and more numerous stems. It is frequently cultivated in gardens, and is a gay ornamental perennial border flower; its palish green foliage on its slender stem, and numerous rather large handsome flowers, have an elegant appearance, and successively expand for a considerable time.

3. *L. angustifolium*, Huds. (Fig. 517) *Narrow-leaved Pale Flax*. Stems numerous, erect, branched upwards; leaves linear, lanceolate, acuminate; sepals ovate, acuminate, bristle pointed, three ribbed, the inner ones ciliated.

English Botany, t. 40.—English Flora, vol. ii. p. 119.—Hooker, British Flora, vol. i. p. 150.—Lindley, Synopsis, p. 53.

Root somewhat tapering, branched and woody. *Stems* numerous from the same root, round, smooth, slender, erect, or somewhat bent at the base, slightly branched above, leafy. *Leaves* narrow, linear lanceolate, with an acuminate point, three ribbed, a somewhat glaucous green, paler beneath. *Inflorescence* slightly branched, few flowered, racemose panicles. *Flowers* smaller than either of the above species, a pale purplish blue colour, with short darker radiating veins. *Calyx* of five sepals, rather shorter than the capsules, ovate, with an acuminate point, terminating in short bristle, the inner sepals more obtuse than the outer, with a shorter point, a broader membranous margin, and ciliated with short hairs. *Petals* broadly obovate, tapering into a claw, sometimes notched, and has an heart-shaped appearance, and frequently the margin is slightly crenated. *Stamens* like the last, of

variable lengths, the *filaments* slender, awl-shaped, with ovate blue *anthers*. *Styles* long, swollen upwards. *Stigmas* feathery. *Capsule* globose, smooth, pointed, the hardened base of the style bursting, with ten valves, ten celled, each cell single seeded.

Habitat.—Sandy and chalky pastures, especially near the sea. Kent, Sussex, Norfolk, Suffolk, near Liverpool; Truro, Falmouth, and other places in Cornwall; Plymouth.—*Mr. Banks*. Near Valebrook Farm, Hastings.—*Dr. Bromfield*.

Perennial; flowering in July and August.

This species is nearly allied to the last, but is readily distinguished by its calyx, smaller flowers and leaves, and the less branched fewer flowered stems; and the whole plant is mostly smaller than either of the above species.

**** Leaves opposite.**

4. *L. catharticum*, Linn. (Fig. 518.) *Purging Flax*. Stem forked above; leaves oblong, opposite, smooth; sepals oblong, acute, ciliated with glandular hairs; petals acute.

English Botany, t. 382.—English Flora, vol. ii. p. 119.—Hooker, British Flora, vol. i. p. 150.—Lindley, Synopsis, p. 54.

Root very small, tapering. *Stem* very slender, solitary, or numerous, erect, or bent at the base, round, smooth, from four to twelve inches high or more, simple below, branched above in a forked manner, with a solitary flower, on a slender footstalk from the angle of each division, and a pair of leaves. *Leaves* smooth, dark green, frequently just above the root they are numerous, crowded, alternate, and opposite, short, obtuse, those of the stem opposite, oblong, obtuse, single ribbed, those of the branches oblong lanceolate, the margins slight, cartilaginous, and roughish. *Flowers* solitary, on a slender footstalk. *Calyx* of five oblong acutely pointed sepals, green, with a stout mid-rib, the margin with a narrow membranous border, ciliated with glandular hairs. *Corolla* of five white ovate acute petals, twice as long as the calyx. *Stamens* on short *filaments*, with small yellow *anthers*. *Styles* short, with capitate *stigmas*. *Capsule* globose, smooth, as long as the calyx, tipped with the pointed base of the hardened style, opening with ten narrow lanceolate valves, ten celled, and each cell single seeded.

Habitat.—Road sides and pastures; abundant.

Annual; flowering in June and July.

Purging Flax is a pretty little plant; its slender branches hang gracefully, drooping before its small star-like flowers have expanded, and then becomes erect. It has a bitter disagreeable taste, and acts as a cathartic; a handful infused in half a pint of boiling water is sufficient for a grown up person. It is frequently administered by the country people, and in small doses it is said to give tone to the stomach and bowels.

GENUS CII. SIBBAL'DIA—LINN. *Sibbaldia*.

Nat. Ord. ROSACEÆ. JUSS.

GEN. CHAR. *Calyx* of ten segments, the alternate ones small. *Corolla* of five petals, inserted into the calyx. *Fruit* five small nuts, placed upon a dry receptacle. (*Stamens and nuts vary from five to ten*).—"Named in honour of *Robert Sibbald*, who wrote on the natural history of Scotland about the latter end of the 17th century, and who published a figure of our Scottish species of this genus."

1. *S. procumbens*, Linn. (Fig. 519.) *Procumbent Sibbaldia*. Leaves ternate; leaflets wedge-shaped, three toothed; petals lanceolate.

English Botany, t. 897.—English Flora, vol. ii. p. 120.—Hooker, British Flora, vol. i. p. 151.—Lindley, Synopsis, p. 98.

Root stout, woody, with branched fibres, much branched and tufted at the top, and thickly clothed with the dry brown scaly remains of the old leaves. *Stems* herbaceous, mostly several, short, scarcely branched, leafy, round, procumbent, rough, with hairs pointed upwards. *Leaves* on long slender footstalks, hairy, with a pair of winged, pointed, membranous *stipules* at the base, leaflets three, on short footstalks, wedge-shaped, the apex with three teeth, the middle one the smallest, dark green, frequently tinged with a purplish hue, the mid-rib slender, with slender netted veins, hairy, especially on the under side. *Inflorescence* a leafy corymbose tuft, of a few yellow flowers. *Calyx* of ten segments, hairy, five lanceolate, acute, and the five intermediate ones linear, acute. *Corolla* of five petals, lanceolate, inserted into the calyx opposite the smaller segments, and about the same length, or shorter. *Stamens* five, short, inserted into the calyx between the petals. *Anthers* small, roundish, yellow. *Germens* five, or occasionally ten, each with a style arising from the side. *Stigmas* small, obtuse. *Fruit* five or ten small smooth ovate compressed nuts, placed upon a dry receptacle.

Habitat.—Near and upon the summit of the Highland Mountains of Scotland; abundant.

Perennial; flowering in July.

This hardy little perennial, growing upon the mountain top, is very common on Ben Lomond and other Highland Mountains, and commemorates the name of one who loved to ramble over their rugged brows. It has much the habit and is nearly allied to *Potentilla*, and has the character of the natural order Rosaceæ; but has a definite number of stamens and pistils. It is as frequent in the alpine districts of Switzerland and Italy as with us, and sometimes it is found with leaves nearly smooth above, but very rough below.

ORDER VI.

HEXAGYNIA. 6 PISTILS.

GENUS CIII. DROSE'RA.—LINN. *Sun-dew.*

Nat. Ord. DROSE'RA'CEÆ. DE CAND.

GEN. CHAR. *Calyx* deeply five-cleft. *Corolla* of five petals. *Styles* three or five, divided in two. *Capsule* one celled, three valved. *Seeds* numerous.—Name from *δροειρα*, dewy; which is from *δροος*, dew; from the glands at the apex of the hairs appearing like dew.

1. *D. rotundi'folia*, Linn. (Fig. 520.) *Round-leaved Sun-dew.* Leaves orbicular, with hairy footstalks; scape erect; seeds chaffy.

English Botany, t. 807.—English Flora, vol. ii. p. 122.—Hooker, British Flora, vol. i. p. 151.—Lindley, Synopsis, p. 38.

Root fibrous. *Scape* erect, solitary, or several from the same root, round, smooth, from two to five inches high, leafless, round, smooth, red. *Leaves* numerous, orbicular, somewhat concave, green or purplish, the upper side clothed with red glandular hairs, those on and near the margin longer than those of the disk, and mostly recurved, the under side smooth, and mostly two or three ribbed, the footstalks of variable lengths, flattish, dilated upwards, and more or less clothed with simple soft hairs. *Inflorescence* a curved one sided raceme, of a few white *flowers*, each elevated on a short footstalk, from the bosom of a narrow lanceolate bractea, which soon falls away. *Calyx* of four or five unequal ovate oblong smooth segments, with the margin more or less jagged. *Corolla* of five petals, white, oblong, expanding only in the bright sunshine. *Stamens* five, with small yellow two celled *anthers*. *Styles* generally six, sometimes five, rarely four. *Capsule* ovate, of one cell, opening with three valves. *Seeds* small, chaffy, numerous.

Habitat.—Bogs and wet heathy ground; frequent.

Perennial; flowering in July and August.

2. *D. longi'folia*, Linn. (Fig. 521.) *Spathulate-leaved Sun-dew.* Leaves obovate, wedge-shaped; scape curved or decumbent at the base, ascending, rather longer than the leaves; seeds with a compact rough coat, not chaffy.

English Botany, t. 868.—English Flora, vol. ii. p. 123.—Hooker, British Flora, vol. i. p. 151.—Lindley, Synopsis, p. 38.—*D. intermedia*, Hayn. *Schrad. Journ.*

Root small, fibrous. *Scape* round, smooth, rather longer than the leaves, red, curved or decumbent at the base, becoming erect. *Leaves*

numerous, all radical, on slender footstalks, smooth, or scattered over with more or less numerous hairs, especially at the base, obovate, wedge-shaped or spatulate, greenish purple, thickly clothed on the upper somewhat concave side with glandular pink hairs, those on and near the margin much longer than the others, and generally curved. *Inflorescence* a curved one sided raceme, of a few white *flowers*, each on a short footstalk, from the base of an awl-shaped *bractea*, which in a short time falls away. *Calyx* of four or five unequal short obtuse or acute segments, smooth, pinkish green. *Corolla* white, of from five to eight ovate oblong petals, and with about the same number of *stamens*. *Styles* also variable, from six to eight. *Stigmas* cloven. *Capsule* ovate, obtuse, single celled. *Seeds* numerous, with a compact rough coat, not chaffy, as in the last species.

Habitat.—Bogs and wet heathy ground; frequent, but most common in the Southern Counties.

Perennial; flowering in July and August.

3. *D. anglica*, Huds. (Fig. 522) *Great Sun-dew*. Leaves linear, wedge-shaped; scape erect, much longer than the leaves; seeds with a loose chaffy coat.

English Botany, t. 869.—English Flora, vol. ii. p. 123.—Hooker, British Flora, vol. i. p. 152.—Lindley, Synopsis, p. 38.—*D. longifolia*, Hayn. Schrad. Jour.

Root small, fibrous. *Scape* round, smooth, mostly as long again as the leaves, red, erect from the base. *Leaves* numerous, on long slender smooth or hairy footstalks, especially at the base, linear, wedge-shaped, pale purplish green, the upper surface thickly clothed with red glandular hairs, those of the margin much longer than the disk, straight, or curved, and of irregular lengths. *Inflorescence* a curved one sided raceme, of a few white *flowers*, each on a short footstalk, from the base of a narrow awl-shaped *bractea*, which shortly falls away. *Calyx* smooth, of four or five ovate oblong acute segments, mostly of irregular lengths, and often with the margin jagged. *Corolla* of from four to eight oblong obtuse white petals. *Stamens* equal in number with the petals. *Styles* varying from five to eight, with clavate *stigmas*, not cleft, as in the last species. *Capsule* oblong, obtuse, of a single cell, with numerous seeds, having a loose chaffy coat.

Habitat.—Bogs and wet heathy ground; less frequent than the last. Both in Scotland and England, and occasionally found growing together.

Perennial; flowering in July and August.

This species was long thought only a variety of the former, but the shape of the stigmas and the different characters of the seed sufficiently point out the difference, independent of this being a much larger plant, with longer, narrower, more linear leaves, and the scape of the former being curved at the base, while this is erect and never curved.



519

Sibbaldia procumbens



520

Drosera rotundifolia.



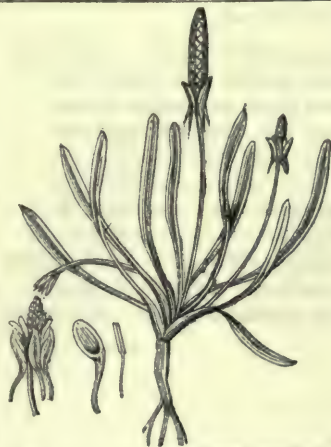
521

Drosera longifolia.



522

Drosera anglica.



523

Myosurus minimus.



524

Fasciola hepatica.

It was at one time thought that the leaves possessed the same irritable property that the America Fly-trap (*Dionæa Muscipula*) has, hence it is that they are sometimes called English Fly-trap; but the manner in which flies are entangled in the leaves of this plant appears quite different. Each hair is terminated with a small gland, which secretes a glutinous fluid, and when any insect settles upon any part of the leaf it sticks, and by its struggles to escape only entangles itself the more, and at length becomes so surrounded with the curved hairs, attaching themselves by the sticky fluid, as to entirely prevent the escape of the insect, and is held in that position, which consequently destroys it.

We have already adverted (in page 122) to the power of which these plants are accused, in causing the rot in sheep; and it was formerly thought that they were useful in promoting the cure of consumptive persons, from the idea which the old doctors had, that because they saw the glands on the hairs moist with these secretions, they would supply the moisture which they thought was necessary to prevent the drying up of the lungs, which seems to have been their notion of the disease known by the name of consumption; but the acidity of these plants appears from the account of Gerarde to have caused those who took this new restorative to die the sooner. All of them seem to contain a considerable proportion of colouring matter, as they stain the paper on which they are preserved for a considerable time after they are dried.

ORDER VII.

POLYGYNIA. MANY PISTILS.

GENUS CIV. MYO'SURUS.—LINN. *Mouse-tail*.

Nat. Ord. RANUNCULACEÆ.

GEN. CHAR. *Calyx* of five pieces, elongated at the base. *Corolla* of five petals, with filiform tubular claws. *Capsules* indehiscent, several, triquetrous, single seeded, inserted into a much elongated columnar receptacle, and terminated by the styles.—Name from *μῦς*, *μῦς*, a mouse; and *οὐρα*, a tail; from the much elongated cylindrical receptacle.

1. *M. mini'mus*, Linn. (Fig. 523.) *Common Mouse-tail*.

English Botany, t. 435.—English Flora, vol. ii. p. 124.—Hooker, British Flora, vol. i. p. 152.—Lindley, Synopsis, p. 10.

Root small, fibrous. The whole plant herbaceous, from two to six inches high. *Leaves* numerous, all radical, mostly erect, linear, spatu-

late, pale green, somewhat fleshy, single ribbed, with an acute or bluntish point, and tapering at the base into a long footstalk. *Scape* erect, round, smooth, slender, green, longer than the leaves, bearing a single small pale green terminal *flower*. *Calyx* of five pieces, gibbous at the base, or elongated into a spur-like appendage, the upper part lanceolate, single ribbed, somewhat fleshy. *Corolla* of five white or greenish petals, with a dilated limb and long filiform tubular claw. *Stamens* various, mostly five, with narrow yellow two celled *anthers*. *Stigmas* solitary, small, sessile. *Receptacle* at first included within the flower, crowded with numerous oblong germens, afterwards elongating to from one to three inches, much resembling in its round tapering form a mouse's tail. *Germens* somewhat triangular, very much crowded, each single seeded.

Habitat.—Corn fields and waste places, especially in a gravelly or sandy soil; in England not very common, doubtful if found in Scotland, and not known in Ireland.

Annual; flowering in May.

A curious little plant, well characterised by its generic name of Mouse-tail, which it much resembles in the columnar form of its receptacle, especially when the seeds are ripe, and the great number of seeds which each plant produces, these being not unfrequently from two to three hundred.

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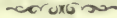
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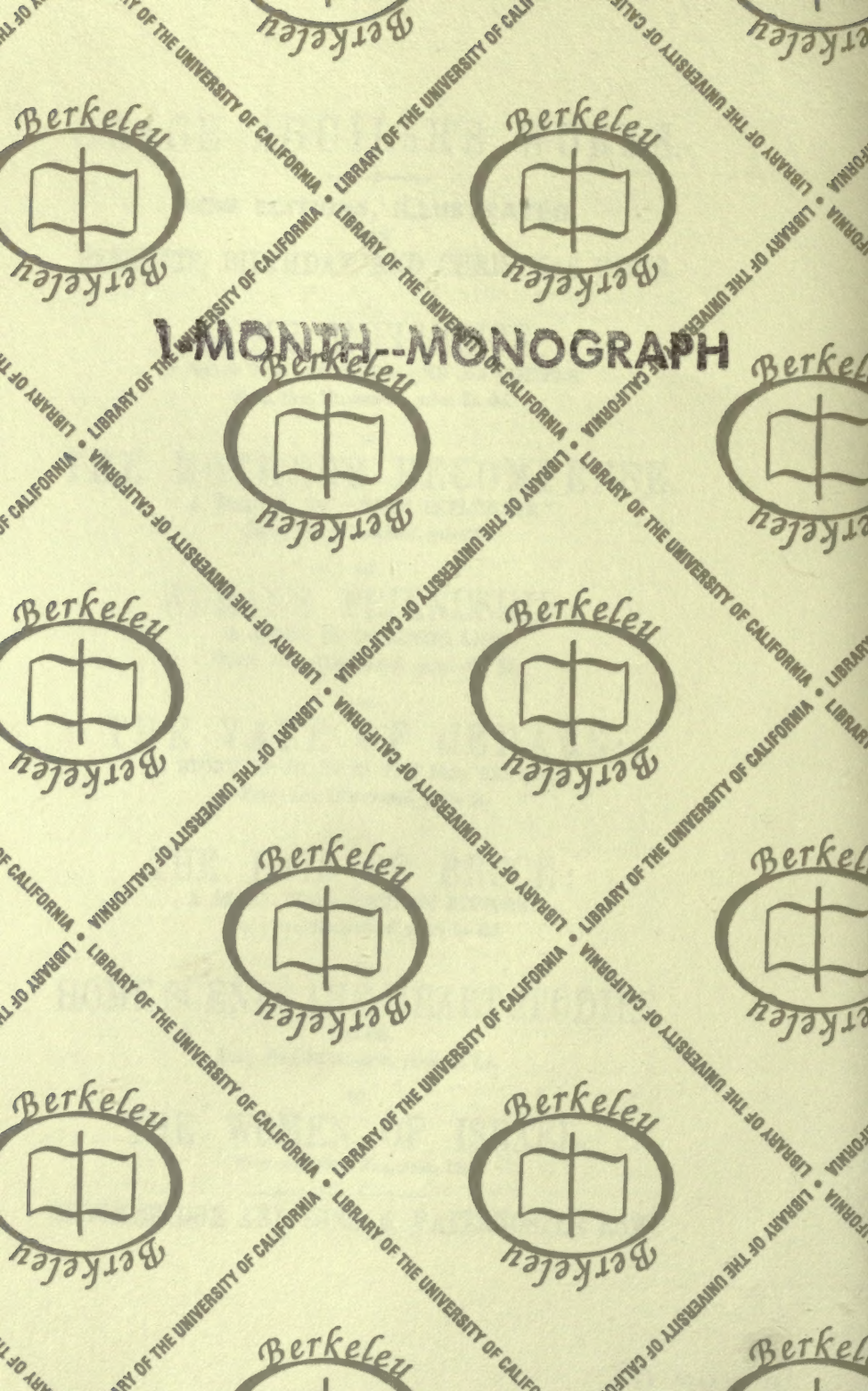
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